JPRS 76261

20 August 1980

USSR Report

ENERGY

No. 28

FBIS FOREIGN BROADCAST INFORMATION SERVICE

NOTE

JPRS publications contain information primarily from foreign newspapers, periodicals and books, but also from news agency transmissions and broadcasts. Materials from foreign-language sources are translated; those from English-language sources are transcribed or reprinted, with the original phrasing and other characteristics retained.

Headlines, editorial reports, and material enclosed in brackets [] are supplied by JPRS. Processing indicators such as [Text] or [Excerpt] in the first line of each item, or following the last line of a brief, indicate how the original information was processed. Where no processing indicator is given, the information was summarized or extracted.

Unfamiliar names rendered phonetically or transliterated are enclosed in parentheses. Words or names preceded by a question mark and enclosed in parentheses were not clear in the original but have been supplied as appropriate in context. Other unattributed parenthetical notes within the body of an item originate with the source. Times within items are as given by source.

The contents of this publication in no way represent the policies, views or attitudes of the U.S. Government.

PROCUREMENT OF PUBLICATIONS

JPRS publications may be ordered from the National Technical Information Service (NTIS), Springfield, Virginia 22161. In ordering, it is recommended that the JPRS number, title, date and author, if applicable, of publication be cited.

Current JPRS publications are announced in Government Reports Announcements issued semimonthly by the NTIS, and are listed in the Monthly Catalog of U.S. Government Publications issued by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

Indexes to this report (by keyword, author, personal names, title and series) are available through Bell & Howell, Old Mansfield Road, Wooster, Ohio, 44691.

Correspondence pertaining to matters other than procurement may be addressed to Joint Publications Research Service, 1000 North Glebe Road, Arlington, Virginia 22201.

Soviet books and journal articles displaying a copyright notice are reproduced and sold by NTIS with permission of the copyright agency of the Soviet Union. Permission for further reproduction must be obtained from copyright owner.

JPRS 76261

20 August 1980

USSR REPORT

ENERGY

No. 28

CONTENTS PAGE

ELECTRIC POWER

Changes in Natural Indicators System Reported
(EKONOMICHESKAYA GAZETA, Jul 80) 1

Installation of Test Stands To Check Nuclear Power Equipment
(A. Maksimov; TRUD, 15 Jul 80) 2

First Experimental Base for Use of Solar Energy
(A. Kucherenko; PRAVDA, 6 Jun 80) 4

All Six Turbines in Operation at Zeyskaya GES
(V. Letov; IZVESTIYA, 29 Jun 80) 6

ENERGY CONSERVATION

Energy Conservation Program Drafted
(S. Yatrov; SOTSIALISTICHESKAYA INDUSTRIYA, 29 May 80) 8

FUELS

Ministry of Gas Industry To Oversee Natural Gas Use
(SOTSIALISTICHESKAYA INDUSTRIYA, 22 Jun 80)........ 11

Ministry of Gas Industry Responds to Gas Use Criticism
(V. Dinkov; PRAVDA, 21 Jun 80) 13

Coal Ministry Blamed for Slow Automated Equipment Development
(V. Antipov; SOTSIALISTICHESKAYA INDUSTRIYA, 21 Jun 80) 14

Status of Bashkir ASSR Oilfields Reported
(M. N. Gallyamov; NEFTYANIK, Jun 80) 17

Selection of Oil Output Raising Methods Analyzed
(M. Sattarov; NEFTYANIK, Jun 80) 24

Buried Reefs as Source of Offshore Oil, Gas Deposits
(N. Khalilov; VYSHKA, 17 Jul 80) 32

'Druzhba' Oil Pipeline to Western Socialist Countries Completed
(V. Vadimov; IZVESTIYA, 25 Jun 80) 35

Unification of Oil Drilling Complex Speeds Up Well Construction
(IZVESTIYA, 25 Jun 80) 36

Shale-Burning Power Plant Shows Promise
(K. I. Senchugov; SOVETSKAYA ESTONIYA, 20 Jul 80) 37

Shale Oil Production Defended
(B. Tyagunov, et al.; SOVETSKAYA ESTONIYA, 23 Jul 80) 41

Construction of Tyumenskaya Oblast Gas Pipelines Unsatisfactory
(Yu. Goryainov; STROITEL'NAYA GAZETA, 18 Jun 80). 45

Gas Pipeline Extended in Lithuania
(I. Kasyukov; IZVESTIYA, 25 Jun 80) 48

Laser Finds Methane Leaks on Gas Pipeline
(V. Vukovich; IZVESTIYA, 9 Jul 80) 50

Work on Yarkovo Compressor Station Ahead of Schedule
(V. Il'in; IZVESTIYA, 22 Jul 80) 51

Miner Competition Results Announced
(N. Budnikov; TRUD, 24 Jul 80) 53

Geologists Receive Praise, Support
(Editorial; PRAVDA, 12 Jul 80) 60

Equipment Produced for New Tyumen' Tobol'sk Petrochemical Plant
(I. Kalashnikov; NEDELYA, 7-13 Jul 80) 63

Increased Use of Internal Reserves Sought at Machine-Building Plant
(Arkadiy Isayevich Kurkovskiy; EKONOMICHESKAYA GAZETA, Jul 80) 65

Successful Drilling Teams in Turkmeniya
(K. Orazov; TURKMENSKAYA ISKRA, 1 Mar 80) 70

Cluster Method Increases Oil Output
(Yu. Petrov; IZVESTIYA, 5 Jul 80) 72

Measures To Increase Efficiency of Cheleken Oil Extraction
(V. Lebed'; TURKMENSKAYA ISKRA, 22 Mar 80) 73

Drilling Crews Criticize Shortcomings in Material Supply
(A. Shashkin, et al.; IZVESTIYA, 21 Jun 80)........ 76

New Machine Increases Output of Thin Coal Beds
(P. Voroshilov; IZVESTIYA, 6 Jul 80) 79

Briefs

Gasoline Fire 80
Dump Truck Conversion 90
Bending Pipelines 80
Tyumen' Oil 81

CHANGES IN NATURAL INDICATORS SYSTEM REPORTED

Moscow EKONOMICHESKAYA GAZETA in Russian No 28, Jul 80 p 9

[Article: "Natural Indicators"]

[Text] In 1980, the Minelektrotekhprom [Ministry of the Electrical Equipment Industry] jointly with the USSR Gosplan introduced changes into the system of natural indicators that make it possible to take into account more fully the consumer properties and quality of electrotechnical production.

If before, for example, 0.5 to 100 kilowatt AC generators were planned in 1000 pieces of consolidated items, now, along with the quantitative indicator, a qualitative indicator is also established in thousands of kilowatts. This reflects more precisely the degree of satisfaction of requirements in products of a strictly defined type. The indicator for planning the output of lead batteries was improved considerably. Now, in addition to weight parameters, in characterizing the battery according to the weight of the lead contained in it, the characteristic of its capacity in ampere-hours was established. Similarly improved were indicators for planning the output of other electrotechnical products.

A single nomenclature for electrotechnical products was developed in planning and preparing reports. The plan for 1981 and the Eleventh Five-Year Plan period is being developed on the basis of the new indicators and a single nomenclature for the products.

Since January 1980, plan tasks for all indicators have been sent to associations and enterprises in the form of a cumulative total and the evaluation of plan fulfillment is made on the basis of this principle. Already the first results of this work indicate that production associations and enterprises have established more intensive plan tasks for the first months of the quarter which eliminates crash work in the last ten days of the production month and provides regular work in the industry. In the first quarter, associations and enterprises of the ministry produced 25.2 percent of products of the annual task.

The complete planning-estimate documentation on the volume of capital investments in 1981 was finished by the first of July. In preparing this documentation, regulations were taken into account on completing, in 1981, the introduction of billing between contractors and clients for fully completed construction and facilities released for operation enterprises ready for the production of products.

2291
CSO: 1822

ELECTRIC POWER

INSTALLATION OF TEST STANDS TO CHECK NUCLEAR POWER EQUIPMENT

Moscow TRUD in Russian 15 Jul 80 p 1

[Article by A. Maksimov (Volgodonsk, Rostovskaya Oblast): "A Tester for a Reactor"]

> [Text] The installation of test stands for checking the nuclear power equipment at the "Atommash" is proceeding at full speed.

The construction of the power unit in building No 1 at "Atommash" is classified as among the most important priority projects. Its full name is a complex of test stands intended for testing units and welded joints of the reactor housing.

At present, separate parts of the complex are being installed. Workers of trust administrations, the "Yuzhstal'konstruktsiya" and the "Yuzhtekhmontazh", have come to the power unit. Stubborn competition began between them from the very first days to reduce the installation time. The installers work,as do all builders and operation workers of "Atommash", under a slogan "We will build ahead of schedule and assimilate ahead of schedule!"

"We are installing the framework of the power unit with consolidated parts," stated Aleksandr Pan'shin, brigade leader of "Yuzhstal'konstruktsiya," "because of that we plan to reduce the structural steel assembly time by a week."

Their "rivals" -- the collective of the Rostov Installation Administration of the No 2 Trust of the "Yuzhtekhmontazh," also has an intense program for the installation of the power unit. It must install the test unit and the monitoring assembly of the reactor housing. The brigade headed by Anatoliy Kaz'menko works here.

The builders have already completed three caissons. The testing of the atomic reactor housing will be done in the middle one, the largest, twenty meters deep. V. Zayarov, chief of the testing complex stated:

"Conditions that originate in the operation of the reactor will be simulated on the power unit. The finished housing of the atomic reactor will be lowered by a powerful special design 1200 ton crane and the caisson will be tightly covered. Then water will be fed to the complex over special systems. Hydraulic tests of all welded connections of the housing will be made in the caisson. The housing cover and other units will be tested in the other caissons also "hidden" deep in the earth.

Our reactors have a long life -- their quaranteed time of operation is thirty years. Therefore, we impose the most stringent requirements on builders, installers and adjusters.

To put the complex in operation more rapidly participants in its construction developed wide competition to achieve the highest productivity of labor. The latest results named the following leading collectives: the brigades of Aleksandr Pan'shin, Anatoliy Kaz'menko and Grigoriy Knyazev. The collectives they guide set the tone in the competition. The Atommash workers decided to complete the first housing for the atomic reactor by the opening of the 26th congress of the party. The test power unit must be completed still earlier. Striving to put it in operation as soon as possible the installers work very intensively. The builders gave their word that they would put into operation this most complex engineering structure by the 63rd Anniversary of the Great October.

2291
CSO: 1822

ELECTRIC POWER

FIRST EXPERIMENTAL BASE FOR USE OF SOLAR ENERGY

Moscow PRAVDA in Russian 6 Jun 80 p 6

[Article by A. Kucherenko, PRAVDA correspondent, (Krymskaya Oblast): "What Can the Sun Do".]

> [Text] In Alushta, on the southern shore of Crimea, where the sun is bountiful and the sky is clear, the construction started of the first experimental base in the USSR for utilizing solar energy.

In recent years, the most diverse investigations are being carried out actively in our country on problems of accumulating and utilizing solar energy. Many interesting results were obtained. But so far, they have not gone beyond the "boundaries" of laboratories and institutes. The Alushtinskaya base will continue the experiment under production conditions.

The laboratory building will be part of a large complex. Solar installations for heating buildings in winter and air conditioning apartments in the summer will be checked and tested here. Right beside the complex will be a swimming pool with a block of technological rooms. In these, it is planned to investigate, on a large scale, the possibilities of heating sea water by the sun in the fall, winter and spring. In single-story cottages, built on the terrority of the complex, scientists of the State Power Institute imeni G. Krzhizhanovskiy will check versions of solar energy to heat houses in rural areas.

The experimental base in Alushta is far from being the only example of using solar energy in Crimea. At present, the first solar electric power plant is being designed and construction will begin in the near future.

... Thousands of huge mirrors will form a gigantic flat cup from whose center a 300-meter tower will rise to the sky. A steam generator will be mounted at its top. The reflected solar rays will heat water to boiling. The steam formed will operate a turbine. The power of the electric power plant will be five megawatts. But the next one will be 40 to 50 times more powerful.

The Kiev Zonal Scientific Research Institute of Experimental Design began preparing working drawings for hot water supply systems. They will be installed in the administration building of Mechanical Repair Plant in Simferopol, in the buildings and dining room of the "Kastropol'" boarding house at the rest base in Alushta and other places. These systems will be put in operation in 1980-1983.

Crimea is opening up a new page in the business of using solar energy.

2291
CSO: 1822

ELECTRIC POWER

ALL SIX TURBINES IN OPERATION AT ZEYSKAYA GES

Moscow IZVESTIYA in Russian 29 Jun 80 p 1

[Article by V. Letov, IZVESTIYA correspondent, (Amurskaya Oblast): "Zeya" "All Six Turbines in Operation"]

> [Text] This June is a red letter date in the history of the power workers of the Far East. All six units of the Zeyskaya GES began to work for the national economy of the country. The last unit of the power plant was put in operation half a year ahead of schedule.

Zeyskaya lights up not only the Amurskaya Oblast, but also western Khabarovskiy Kray. As rays of a hand-made sun, electric power transmission lines stretch to Transsib, the "capital" of the Baykal-Amur RR mainline -- Tynde and industrial centers of the entire region.

Six units ... Each one of them is equal in power to all electric power plants of the Amurskaya Oblast at the start of the sixties! One million, two hundred ninety thousand kilowatts -- this is the total power of the giant on the Zeya.

The Zeyskaya hydroelectric power plant has become the reliable support of the 1000-kilometer electric power transmission line which combines all electric power plants east of Baykal into one power system. The voltage of this mainline power bridge is 500,000 volts. An electric power transmission line is being built over the spurs of the Soktakhan range. It will carry current from the Zeyskaya GES to facilities of the middle section of the Baykal-Amur RR. A 220-LEP [Electric power transmission line] almost 190 kilometers long will tie the GES with the young Zeysk Settlement by the shortest route. The power of the river will come to the new developing region in the North Priamur'ye.

A 115-meter concrete dam stopped flooding reliably. The summer flow of the river which receives, on its 1000-kilometer route, 30,000 tributaries, exceeded the winter flow in headwaters by 650 times and downstream -- by 60 times. This was in the past.

Huge territories were freed forever from catastrophic floods. The high dam made it possible to double arable areas in the bottom lands of the Zeya and Amur. The gross production of agricultural products will increase by 4.5 times here.

Previously, annual floods damaged farms on a huge scale. Losses were measured in the millions of rubles. And even if the GES still was not operating, it would pay for itself as a water flow regulator. But the plant paid for itself purely from the power standpoint -- Zeya current has already been flowing for almost five years to cities and settlements, expanding its effective zone year after year. The Zeyskaya hydroelectric power plant is now working on the tenth billion kilowatt-hours of produced electric power.

The artificial sea, stretching for over 600 kilometers, made access for large vessels to reach the untouched virgin soil of the taiga. Speedy "Rakety" are a common sight today in a kray that had no roads.

A great labor victory was achieved -- still another memorable landmark of the Tenth Five-Year Plan period. The last unit of the Zeyskaya GE was put into operation during the important days of work of the Plenum of the Central Committee of the ChSU and the Third Session of the USSR Supreme Soviet of the Tenth Convention. The Far East power builders are dedicating their success to the coming 26th congress of their own party.

2291
CSO: 1822

ENERGY CONSERVATION

ENERGY CONSERVATION PROGRAM DRAFTED

Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 29 May 80 p 2

[Article by S. Yatrov, director All-Union Scientific Research Institute of Integrated Fuel-Power Problems, USSR Gosplan: "Energy Resources: Ways to Economize"]

[Text] Our country is credited with almost a fifth of the world's production of energy resources. This today is over 2 billion tons of comparison fuel--about one and a half times more than in the early 1970's.

Such dynamic growth is the result of swift expansion of our economy coupled with its concurrent assumption of a path of intensification, of growth in effectiveness and quality. This necessitated preferential development of fuel extraction and electric power production. The goal of the energy strategy of the past decade was to insure priority development of the most economical types of resources--petroleum and gas. As a result the energy consumption structure changed significantly: The country's fuel and power balance essentially became dominated by petroleum and gas. The proportion of effective forms of fuel within it exceeded 70 percent.

This course played a positive role, strengthening our economy. The Soviet Union is the world's sole industrial power having a national economy developing on the basis of its own fuel and power resources. However, this does not at all mean that our resources are inexhaustible, or that they are acquired relatively easily.

The territorial distribution of the country's principal fuel and power bases changed significantly in recent years. The extraction center shifted into Siberia, to the East into regions having complex geological and climatic conditions. The expenditures increased correspondingly. As an example the cost of petroleum extraction increased 1.6 times in the past decade, while that of gas almost doubled. Estimates show that the technical-economic indicators of their extraction will worsen in the foreseeable future as well. Moreover the outlays on transportation of energy resources to the areas of their consumption have grown significantly. It would be sufficient to point out that in the past 10 years, the quantity of fuel cargo increased by 5 times, and today it makes up about 40 percent of all rail freight traffic.

Under these conditions problems associated with economizing upon and increasing the effectiveness of the use of fuel and electric power are becoming extremely important. "No matter the rate at which power engineering develops," said L. I. Brezhnev at the November Plenum (1979) of the CPSU Central Committee, "conservation of fuel and power will continue to be the most important national task."

The 1970's were marked by noticeable successes in economization of fuel and power resources, and in raising the effectiveness of their use. Improvement of production processes and introduction of energy-conserving equipment made it possible to reduce unit consumption of fuel for electric power production by almost 20 percent, of cast iron and steel by 12 percent, and of cement by 7 percent. Consumption of electric and thermal energy in many other industrial processes experienced a relative decrease. In last 4 years of the 10th Five-Year Plan we have managed to conserve 80 million tons of comparison fuel.

And yet not all reserves have been placed into action. Moreover they can be found in every sector of the national economy. Much fuel is left in the subsoil, lost during transportation, and expended irrationally by consumers.

In order to mobilize the main reserves more fully and with better planning, our institute has written up a draft integrated target program for economizing on fuel and power resources and raising the effectiveness of their use. It is intended to span the 1980's, and it includes a number of measures. But the main attention is turned to introducing energy-conserving production processes and equipment into the national economy, and to modernizing existing power production equipment. According to the estimates this should produce up to 60 percent of the total possible economization of energy resources.

Another promising path is that of making fuller use of the energy potential of organic fuel, and substituting its scarcest forms. Take as an example gas and coal. Today, the overwhelming majority of the 140,000 small boiler plants are working on coal, and about half of the thermal electric power plants are working on gas and fuel oil. Estimates show, meanwhile, that it would be more suitable to convert the small boiler plants, especially in food industry and in communal-personal services, to gas--their effectiveness would rise by 10-20 percent. And coal would better be used by electric power plants and by large boiler plants--there, its energy potential would product a tremendously larger payoff.

Thermal electric power plants being built in the 1980's will operate mainly on solid fuel and gas. Plants that are now working on fuel oil will also be converted to these forms of fuel. But the main way to economize on scarce organic fuel is to develop atomic energy. I am referring mainly to erecting centralized atomic thermal electric power plants. At the moment this important problem is in its initial stage of industrial solution. Steps are being taken today to expand scientific research, and to create and assimilate the equipment.

There are also plans for making broad use of geothermal, solar, and wind energy as organic fuel substitutes. In the future, it will become technically possible to utilize thermal waters of a volume equivalent to 10-12 million tons of comparison fuel. According to the estimates their use for energy purposes in the North Caucasus, the Transcaucasus, Central Asia and the Kazakh SSR, and the Far East would be 1.5 times more effective than the traditional forms of fuel. It would be economically suitable to use solar radiation for heating needs, and wind energy to supply power and to satisfy the industrial needs of agricultural production.

The draft integrated target program sets the possible level of economization of all forms of fuel and of thermal and electric power in each ministry and department. Attainment of this level would require them to seriously improve their economic planning and organizational work. But what is most important is to increase the responsibility of association and enterprise executives for effective utilization of fuel and energy resources. It would obviously be suitable today, in the course of writing up the 11th Five-Year Plan and the basic directions for development of the national economy in the 1980's, to enact, as law, a complex of measures insuring all-out economization of fuel and electric power in all spheres of economic activity.

11004
CSO: 1822

MINISTRY OF GAS INDUSTRY TO OVERSEE NATURAL GAS USE

Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 22 Jun 80 p 2

[Article by TASS: "State Supervision of Natural Gas Use"]

[Text] The USSR Council of Ministers has adopted the decree "On Increasing the Role of the Ministry of the Gas Industry in Implementing State Gas Supervision."

According to the decree, the Ministry of the Gas Industry has been entrusted with the development, with the participation of interested ministries and departments, and the approval of unified rules for the use of gas in the national economy.

It has been established that the Ministry of the Gas Industry:

will alter the standard of daily gas supply to the gas consuming enterprises, associations, institutions and organizations, and examine the schedules for gas supply to the consumers presented to it for agreement;

gives permission for the use of new gas-using equipment, introduces into the corresponding planning agencies, ministries and departments suggestions for expanded production of advanced types of such equipment, and makes requirements for the removal from production of uneconomical equipment;

implements state supervision over the observance of the construction-installation organizations that construct for this ministry facilities for the extraction, transport and storage of gas of the standards and rules employed in the construction of these facilities, in particular, concerning the guarantee of reliable and safe operation.

The statute on state gas supervision in the USSR has been approved.

The statute defines the rights and duties of the agencies of the state gas supervision.

The inspectors for the gas supervision are given the right to issue orders that are mandatory for the gas-consuming enterprises on questions of implementing the efficient and effective use of gas, as well as on questions of using the allocated funds for gas and guarantee of the set pattern of gas consumption.

The chief state inspector for the USSR gas supervision and his deputies are given the right to make a decision on stopping gas supply to gas-using units in case these units were started up without permission of the agencies of gas supervision, as well as when the orders are not fulfilled of the officials of these agencies on elimination of violations permitted by the gas-consuming enterprises in the use of gas.

[illegible]
CSO: 1822

MINISTRY OF GAS INDUSTRY RESPONDS TO GAS USE CRITICISM

Moscow PRAVDA in Russian 21 Jun 80 p 3

[Article by V. Dinkov, first deputy minister of the USSR gas industry: "Control Will Be Set Up"]

[Text] The question of an economical consumption of gas that was raised in the article "How to Save Gas" (PRAVDA, 26 March) is very urgent. The territorial inspections of the state gas supervision have checked the use of gas at more than 12,000 enterprises of different ministries and departments. Numerous facts have been revealed of the lack of accounting of gas consumption. There are no standards for gas consumption for the products to be manufactured, the equipment is outdated, etc.

From the results of such checks, the USSR Ministry of the Gas Industry sends annual letters to the ministries and departments with the requirement that the proper order in using gas be set up at the enterprises under their jurisdiction. The territorial inspections at the sites systematically verify the coures of eliminating the detected shortcomings. The results of the checks are reported to the USSR Council of Ministers.

A statute has been prepared on the fuel and energy complex, which sets the main requirements for the efficient use of all types of fuel and energy, the interrelationship between the suppliers and the consumers, as well as the responsibilitiy of the consumers for wasteful consumption of fuel and energy. The new statute significantly expands the functions and rights of the Gosnadzor all the way to holding officials of enterprises and organizations administratively responsible for violations of the norms and rules of gas use.

By the joint order of the Gosstandart [State Committee of Standards] and the Ministry of the Gas Industry a state testing center has been organized for gas burners, whose main task is to test all types of employed and developed gas burners, and to issue permission for their industrial production. All the ministries that produce gas burner equipment are now obliged to present this equipment for tests and to obtain the right for its series production.

The main institute of the ministry for questions of gas use, the VNIIPromgaz [All-Union Scientific Research Institute of Gas Use in the National Economy and Underground Storage of Petroleum, Petroleum Products and Compressed Gases of the USSR Ministry of the Gas Industry], has prepared a draft of rules for the use of gas in the national economy.

9035
CSO: 1822

COAL MINISTRY BLAMED FOR SLOW AUTOMATED EQUIPMENT DEVELOPMENT

Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 21 Jun 80 p 2

[Article by V. Antipov, general director of the production association "Avtomatgormash," Hero of Socialist Labor: "Interrupted Relay Race"]

[Text] This was an unplanned meeting with the miners. However, the conversation did not come up accidentally. The questions that were given to me, it goes without saying, had been discussed many times among the miners, and, as they say were a sore subject.

"Here are you, the director of the association, engaged in the creation of automated devices," said one of the workers in the association "Donetskugol'." "Just when will the coal be extracted by automatic machines, and we will merely control them?"

I answered in that sense that this is a great problem and that we are working on it. The whole problem is time.

"But time is getting short," noted the miner, and others supported him. "This problem can be solved in 2-3 years, but one can also stretch it for a dozen years..."

That is true, it can be stretched out. Everything depends on how the matter is organized.

Our association, "Avtomatgormash' was created 6 years ago. During the years of the 10th Five-Year Plan over 20 resources of mining automatics were developed, tested and introduced into production. Equipment was made for remote-control of the main machines and mechanisms working in the faces. Only recently 28 sets of mechanized timbering with remote control were manufactured.

If one takes all of these developments in a set, they make it possible to transfer the heavy and unsafe physical labor in the face to remote and automatic control machines. The first steps in this direction have already been made, and good results have been attained. At the mine "Krasnolimanskaya" of the association "Dobropol'yeugol'" in the longwall equipped with a stoping complex with automatic timbering, the average annual load that has been reached is 2,740 tons, which is much greater than the standard. The experience of the tunneling brigade of V. Bubnov from the third mine-building administration of the kombinat "Dneproshakhtostroy" is interesting. It was one of the first to master work of the automated tunneling combine. The small collective covered the set standards 2-3 times. The equipment operated without major repair for two guarantee periods.

As we see, all the benefits from introducing means of automation are available. And their production is rising. However, when the matter comes to introducing automatics at the coal enterprises, everything far from goes smoothly.

At first, the developers of the equipment in the order of implementing author's supervision, themselves installed each machine and unit, and trained the mine workers. But now, when the volume of production of resources of automatics has significantly increased, and the area of their application has encomappsed the entire branch, such a path is practically impossible. The coal enterprises now must themselves worry about the introduction. But this did not happen. Precisely at this stage, in my opinion, a break occurred: the mines were not prepared to take the baton of automatics from our hands.

Here there are practically no specialists and workers today who could really use the latest electronic equipment, no standards have been set for the repair and maintenance of automated devices. And nothing has been done to regulate the material interest, the correlation in wages of workers for extraction and electrical mechanics has not been altered, although the fate of the plan depends to a considerable degree on the latter.

It is true that such a situation did not occur at all the enterprises. However, single exceptions do not alter the general picture. The rates of automation of the main processes of coal extraction and tunneling of the mining drifts are hard to acknowledge as satisfactory. "We do not have the time to be involved in this matter," say the mine directors. "We have to produce coal."

The country really does need coal. However, it should be extracted with the least labor and material expenditures. And this problem can only be solved by means of automating production. There is no other way.

In order to correct the situation, it is necessary, first of all, to think up a system for training the workers. A lot can come from the inclusion of the electrical mechanics in the extracting brigades. And finally, in all the coal basins special services should be organized: installation, repair and preventive maintenance of the automated mining equipment. The miners of Karaganda and Vorkuta are doing this.

At present, only 20% of the stoping and 14% of the series tunneling combines are being made in the automated version. If the Yasinovataya Machine-Building Plant of the Ministry of Heavy and Transport Machine Building strives to develop the modern equipment, then the Kopeysk Plant of the USSR Ministry of the Coal Industry does not even think about this. It manufactures tunneling combines with manual control, without means of automation, although we have made such apparatus.

It is true that our developments do not always meet the presented requirements. But we are now working on the solution to these questions.

The association has set up a program for long-range research directed towards releasing man from heavy and unproductive work in the face. In order to realize it, it is necessary first of all to sharply increase the production of automated equipment. Unfortunately, the Makeyevka Plant of Mining Automatics of the Ukrainian SSR Ministry of the Coal Industry, that is included in the association, satisfies the needs of the branch by less than 20%. The first stage in the reconstruction of the enterprise has been practically disrupted by the kombinat "Donetskshakhtostroy." This year's program is also threatened. If measures are not taken today to accelerate the rate of work, we will not be able to provide equipment of automatic control to the Gorlovka, Druzhkovka, Shakhtinsk and other plants of coal machine building.

Here we have arrived at the point, strictly, where the conversation started. On the one hand, there are clearly not enough automated devices, and on the other hand, that which is now manufactured is not used satisfactorily. Evidently, the specialists of the union and Ukrainian ministries of the coal industry need to attentively analyze the created situation.

9035
CSO: 1822

STATUS OF BASHKIR ASSR OILFIELDS REPORTED

Moscow NEFTYANIK in Russian No 6, Jun 80 pp 5-7

[Article by M. N. Gallyamov, chief engineer, deputy general director, Order of Lenin "Bashneft'" Association: "The Main Task of the Oilmen"]

[Text] The Ural-Volga region joined the big oil producers with the discovery of the Ishimbayskoye oilfield, where on 16 May 1932 well No 702, drilled by foreman N. M. Korovinov's team, produced the first oil of the Bashkir ASSR from Permian deposits at a depth of 680 meters. Evaluating the significance of this discovery, Academician I. M. Gubkin wrote in 1932 that the experience of the Ishimbayskoye oilfield would compel us to initiate extensive exploratory operations along the entire Ural and along the entire Volga, and that we would subsequently also seek oil where indications of its presence cannot be found on the surface but where favorable geological conditions exist.

Oil extraction in the Bashkir ASSR grew at a relatively high rate in the prewar years: In 1934 it was 62,500 tons, while in the following 5 years it grew by 1.5 million tons. During the Great Patriotic War Bashkir oilmen, following I. M. Gubkin's recommendations and utilizing the advances in development of drilling methods and equipment, initiated extensive explorations for oil at depths down to 2,000 meters. The explorations were graced with great success--on 26 September 1944 well No 100, drilled by A. T. Tripol'skiy's team, produced a gusher of high-quality Devonian oil from a depth of 1,750 meters with a daily yield of 250 tons. The Devonian oil immediately placed the Bashkir ASSR among the leading oil extracting regions of the country; the republic still holds this position today.

During the period of development of oil industry in the Bashkir ASSR, 175 oil and gas fields were discovered, to include the Tuymazinskoye (1944), Serafimovskoye (1948), Shkapovskoye (1953), Arlanskoye (1955), Sergeyevskoye (1964), and Urshakskoye (1974), and more than 45 million meters of rock were drilled. In two five-year plans--the Ninth and the Tenth--the "Bashneft'" Association has maintained a stable extraction rate for oil and gas condensate around 40 million tons annually. This is not easy, but we are successful, mainly due to constant introduction of the achievements of scientific-technical progress--the main reserve for raising production effectiveness and work quality, extensive development of socialist competition, efficient and coordinated work of all production units, and great organizational and educational work aimed at raising the activity of laborers, engineers, technicians, and white collar workers of the association's enterprises and organizations.

In fact, Bashkir oilmen are pioneers of many initiatives to improve well drilling methods and equipment, and to improve progressive systems for exploiting oilfields, new equipment with which to extract oil and gas, and equipment with which to prepare and convey products within the oilfields. Thus massive introduction of turbodrills led to development of a forced drilling method, assimilation of which promoted fundamental changes in the economics of oilfield development. Our association was the first in the sector to assimilate electric drilling, to employ the method of testing wells during drilling, to flush out the bottom hole with water, and to drill wells of reduced diameter.

Application of perimeter flooding, for the first time at the Tuymazinskoye oilfield, was a major contribution to the development of petroleum industry. In subsequent years we developed and introduced new modifications of this method: zonal, block, contour, and others. Now more than 90 percent of the country's oil is extracted through artificial maintenance of reservoir pressure.

Hydrochloric acid processing of well bottom holes, which subsequently enjoyed extensive introduction, was used for the first time in the USSR at Bashkir oilfields. The republic's oilmen were the first to assimilate derrickless exploitation of wells. Movable PTMT-40 towers, and then movable SUPR-25 machine units, were created for their repair. On the initiative of Bashkir oilmen, new equipment was assimilated for oil extraction--rodless submersible electrocentrifugal pumps. A forced fluid extraction method that significantly raised the oil output of the beds was developed on the basis of their mass application. Our association made a great contribution to the development and industrial introduction of the first oilfield automation and remote control resources. The 4T-2K system has been in operation for more than 20 years. Assimilation of a single-pipe sealed oil and gas collection system making use of Sputnik measuring units made it possible to completely reconstruct oilfield management and lay a sound material foundation for successful introduction of automated control systems (ASU's). Presently we are accelerating introduction of an organizational-technical ASU (OT ASU) into drilling and petroleum extraction. The association's Kustov Information and Computer Center (KIVTs) handles 32 complexes of tasks, most of which were developed by our specialists. It produces a sum total of 600 different documents, the annual publication volume of which is over 80,000 copies. After the OT ASU was introduced, it became possible to optimize the conditions for operation of the mechanized well system on a scientific basis. Automation of production, introduction of scientific organization of labor (NOT), and improvement of the control system are making it possible to constantly reduce the average number of workers per well. As an example in 1979 it was 1.11, as opposed to 1.96 in 1970.

In recent years we have made a major transition to the industrial multiple drilling method (IKM) for accelerated development of new formations using the block-outfit installation principle, which makes it possible to reduce the volume of work to be done. Wells are installed and fitted out during this time as well, as a result of which the total time for building and placing them into operation decreases. This is also being promoted by the practice of lowering electric centrifugal pumps and sucker rod pumps with a drilling rig.

Improvements in the procedures for collecting oil and gas within the oilfield, and for preparing and conveying these products are insuring a high utilization level for by-product gas, which now reaches 93 percent in the "Bashneft'" Association.

Most formations in the Bashkir ASSR from which oil and gas are presently being extracted have been exploited for 20-30 years and more, and they have entered their late stage of development, typified by a constant drop in well yields coupled with a quickly growing water concentration in the products obtained. This is why we are increasing our oil yield mainly by discovering and initiating development of new formations; moreover these formations are small as a rule, their development is difficult, and they require expenditures of constantly increasing amounts. In order to prevent a drop in oil extraction for the association as a whole, each year we must drill through about 1.8 million meters of rock (to include 300,000 meters for exploratory purposes) and place about 800 production and injection wells into operation.

The association's drilling enterprises are successfully completing this difficult and important task. In 1979 they drilled through 48,000 meters of rock in excess of the plan, and the oilmen were given 27 more wells than planned. In 4 years of the 10th Five-Year Plan, the duration of the well construction cycle was decreased by 15 percent. Bashkir drillers are rendering assistance to oilmen of West Siberia in assimilation of this region's oil formations (the Birskoye UBR [Drilling Operations Administration] drilling wells in Tyumenskaya Oblast by the expeditionary shift method). Using the latest achievements in well drilling equipment and methods and actively participating in socialist competition, the association's drillers reported completion of the plan for 4 years of the 10th Five-Year Plan by as early as 17 November 1979. The collectives of the Krasnokholmskoye and Tuymazinskoye UBR's and the Tuymazinskoye and Birskoye geological exploration offices attained the best indicators in the sovkhoz competition for 1979. Teams led by drilling foremen T. M. Vil'danov and Kh. G. Gizatullin have been winners of the competition every year.

But to maintain the planned oil extraction level, it is not enough to just drill new wells into new formations. The amount of fluid extracted from the wells must also be increased by 15-18 million cubic meters each year. This is possible through mass conversion of the wells from ShGN's [sucker rod pumps] to ETsN's [electric centrifugal pumps]. The effectiveness of this measure may be judged from the fact that an additional 784,000 tons of oil and gas condensate were obtained in 1978 due to introduction of 395 ETsN units. However, it would be pertinent to note here that ETsN's are operated in the Bashkir ASSR in more difficult conditions than in neighboring regions, since oil extracted from most of the formations contains 1.5-1.6 percent hydrogen sulfide, and intense deposition of gypsum in the critical zone of the wells and upon equipment is observed in many oilfields. This is creating certain difficulties in the use of ETsN's, and only 30 percent of the mechanized wells are outfitted with these devices. Centralization of the repair and testing of ETsN devices by specialized subdivisions of the association has made a significant contribution to attainment of this indicator. Expansion of the extent to which ETsN's are used in subsequent years is one of the main tasks of the association, inasmuch as the concentration of water in the extracted product is constantly increasing (81 percent in 1979, as compared to 78.9 percent in 1975).

The number of wells outfitted with ShGN's still continues to be large, and it is growing mainly due to introduction of wells drilled into beds exhibiting low productivity, and as a result of placing inactive low-yield wells back into operation.

Considering the constantly increasing water concentration in well discharge, it would be impossible to keep oil extraction at a level of 40 million tons per year without solving one of the main problems of oil extraction technology--increasing the period of well operation between repairs. This time is presently 257 days, and by the end of the five-year plan it should be increased to 280-300 days (the time of well operation between repairs in 1970 was only 120 days). This achievement is associated to a significant extent with a great deal of work done in the association in the last few years to maintain records on the work of the sucker rod columns of deep-well pumps, analyze the causes of mishaps, and develop and introduce measures to prevent breaking of the rods. As a result the number of rod breakages has been decreased to 0.33 per well per year.

Increasing the rate of fluid extraction is a significant measure, but it is not the sole one aimed at maintaining extraction of oil and gas condensate at an annual level of 40 million tons. During the 10th Five-Year Plan the association has been implementing various geological and technical measures in the production activities of the collective in order to intensify extraction of oil and gas; the mean annual effectiveness of these measures is up to 3 million tons of additional oil extracted. Just in the last 4 years we have obtained 4,798,000 tons of oil and gas condensate and 500 million cubic meters of gas in excess of the plan's target due to application of the complex of geological and technical measures.

As before, the main direction of efforts to maintain a high rate of extraction of oil from productive beds continues to be maintenance of reservoir pressure by water injection in oilfields undergoing development. Today, 95 percent of the association's oil is extracted from beds subjected to flooding. A linear flooding system is extensively combined with a zonal system, which results in more-effective influence upon a particular object or section of a bed undergoing exploitation. Moreover the "Bashneft'" Association is employing hydrochloric acid and carbonic acid treatment of the critical zone, thermal processing methods, hydraulic disintegration of beds, injection of high-pressure gas into beds, integrated analysis methods aimed at establishing optimum well operating conditions, and so on. A method for increasing the density of a formerly established network of wells, developed jointly by producers and scientists, is being introduced at the Arlanskoye oilfield. In 1969-1978 the 1,840 wells drilled according to the plan for increasing the well density produced a total of 41 million tons of oil. It is expected that the bed's oil output will increase by 8 percent over the planned output.

Combined thermal, gas, and chemical influence (TGKhV) upon the critical zone of production and injection wells has become an effective geotechnical measure that has enjoyed rather broad acceptance. This method also permits us to control deposition of organic formations on the bed's filtration surface. The number of TGKhV treatments has increased from 200 in 1978 to 280 in 1979, and we plan to perform an average of 500 operations in 1980 and in subsequent years.

In order to reveal the possibilities for their further application in drilling practice, we are conducting experimental industrial operations to inject surfactant and polyacrylamide solutions. We are also working on the methods for injecting carbon dioxide, and the Ashitskiy section of the "Arlanneft'" NGDU [Petroleum and Gas Extraction Administration] is employing a reservoir wet combustion method developed by the Bashkir ASSR Scientific Research and Planning Institute of Petroleum Industry. Oilfield wastes and the wastes of industrial enterprises having good petroleum flushing properties are being used more and more extensively in petroleum extraction.

The tasks of intensifying oil and gas extraction are closely associated with improvements in the techniques for preparing oil, gas, and effluents. Our efforts are concentrated in this area on solving integrated procedural problems associated with introducing block equipment, organizing a unified separation system, setting up an oil preparation system making use of a closed oilfield waste collection and treatment system, organizing introduction of demulsifiers and preliminary dumping of water prior to the loading of oil preparation facilities, and desalinizing and insuring high quality of Devonian and carboniferous oils. In 1979 76 percent of the commercial oil was in the first two quality categories.

The main task associated with supplying electricity to wells and oilfield facilities is insuring the required dependability. For this purpose electricity is supplied to wells at which drilling is finished by an aerial power transmission line carrying 6 kilovolts leading right to the well, where a step-down transformer is installed. This reduces the breakdown rate in the oilfield network and raises the quality of voltage delivered to the well terminals. Moreover 1,320 kilometers of aerial 0.4 kilovolt power transmission lines were torn down at old oilfields in the last 6 years, and 64 kilometers of cable were laid in their place.

Efforts associated with outfitting production operations with the mechanisms, equipment, and transportation resources they need are being aimed at modernizing the existing oilfield equipment, and installing it in blocks to permit their operation by production maintenance bases. Creation of such bases has stimulated improvements in the organizational fundamentals of production, and it made it possible to provide machined metal products of higher quality to oil extracting and drilling enterprises and to capital construction enterprises. Positive changes have occurred in production and equipment maintenance, and in the availability of equipment. Now that the storage responsibilities have been transferred from the enterprises to the UPTO's and KO's [not further identified], it is possible to maneuver resources significantly more efficiently both in capital construction and in production, to accelerate commissioning of production capacities and facilities, and to raise the effectiveness of capital investments. Introduction of centralized and cyclic deliveries of materials from UPTO and KO bases directly to places of their use insured faster commissioning of wells and oilfield facilities and construction of drilling rigs, and it freed up to 10 percent of the transportation for other jobs.

In order to improve the use of transportation resources, the production-technical bases of the industrial transportation administration has been strengthened, the machine unit and section repair method has been introduced, centralized freight delivery and spare part manufacture and restoration has been organized, and the number of shifts has been increased.

Further improvements in oil extraction and well drilling require that the association outfit the enterprises with new motor vehicles, tractors, special machines, and machine units already being produced by industry; this will raise production effectiveness and improve the quality of the work.

Efficiency experts and inventors are providing active assistance to technical development of the association's enterprises and to introduction of new equipment. There are more than 8,000 of them in the "Bashneft'" Association. The economic impact enjoyed from introducing 8,400 proposals in 1979 was about 8 million rubles. The best projects were shown at the VDNKh SSSR [Exhibition of the Achievements of the USSR National Economy], where in 1979 our association demonstrated 25 exhibits.

The association and its subdivisions received government awards for their great successes achieved in fulfillment of production plans and socialist pledges: the Order of Lenin--the collective of the "Tuymazaneft'" NGDU (1948) and the collective of the "Bashneft'" Production Association (1966);

the Order of the Red Labor Banner--the collective of the Neftekamskoye Drilling Operations Administration (1971) and the collective of the Tuymazinskoye Drilling Operations Administration (1976); the collective of the "Bashneft'" Production Association received the "For Labor Valor in the Ninth Five-Year Plan" commemorative medal, and it was entered into the All-Union Honor Roll of the VDNKh SSSR (1976).

Seventeen of the republic's oilmen were awarded the Hero of Socialist Labor title for valorous labor, and 18 became laureates of the USSR State Prize. They include well underground and capital repair foremen A. G. Basyrov from the "Chekmagushneft'" NGDU and R. G. Fayzullin from the "Arlanneft'" NGDU; I. I. Dunayev of the "Yusharlanneft'" NGDU was awarded the title laureate of the Lenin Komsomol Prize.

Special emphasis should be laid on the fact that an excellent collective has evolved in the "Bashneft'" Association. The engineers, technicians, and executives of the enterprises, and the laborers and white collar workers are well trained, experienced specialists deeply devoted to their profession. They are capable of solving the most complex problems facing the republic's oil industry, and of successfully reaching and surpassing the plan's targets. And the targets of the association's collective are great and complex. The old oil extraction regions, such as those in the Bashkir ASSR, continue to have important significance to fulfillment of the decisions of the 25th CPSU Congress associated with increasing the country's fuel and energy resources and strengthening the foundation of petrochemistry. The republic enjoys advantageous economic and geographic conditions; it is in direct proximity to fuel processing and consuming centers, it possesses a developed industrial base and a good transportation system, it enjoys a high level of power and equipment availability, and it is staffed by a highly skilled work force. Thus, as was the case in the 9th and 10th five-year plans, both this year and in subsequent years the republic's oilmen will apply all of their effort to complete the main task--keeping extraction of oil and gas condensate at the attained level.

COPYRIGHT: Izdatel'stvo "Nedra", "Neftyanik", 1980

11004
CSO: 1822

FUELS

SELECTION OF OIL OUTPUT RAISING METHODS ANALYZED

Moscow NEFTYANIK in Russian No 6, Jun 80 pp 27-30

[Article by Prof. M. Sattarov, doctor of technical sciences VNIIOENG: "Economics Dictate the Choice"]

[Text] The CPSU Central Committee and USSR Council of Ministers decree "On Improving Planning and Strengthening the Influence of the Economic Mechanism on Increasing Production Efficiency and Work Quality" foresees extensive application of the specific-purpose program method for solving major national economic problems.

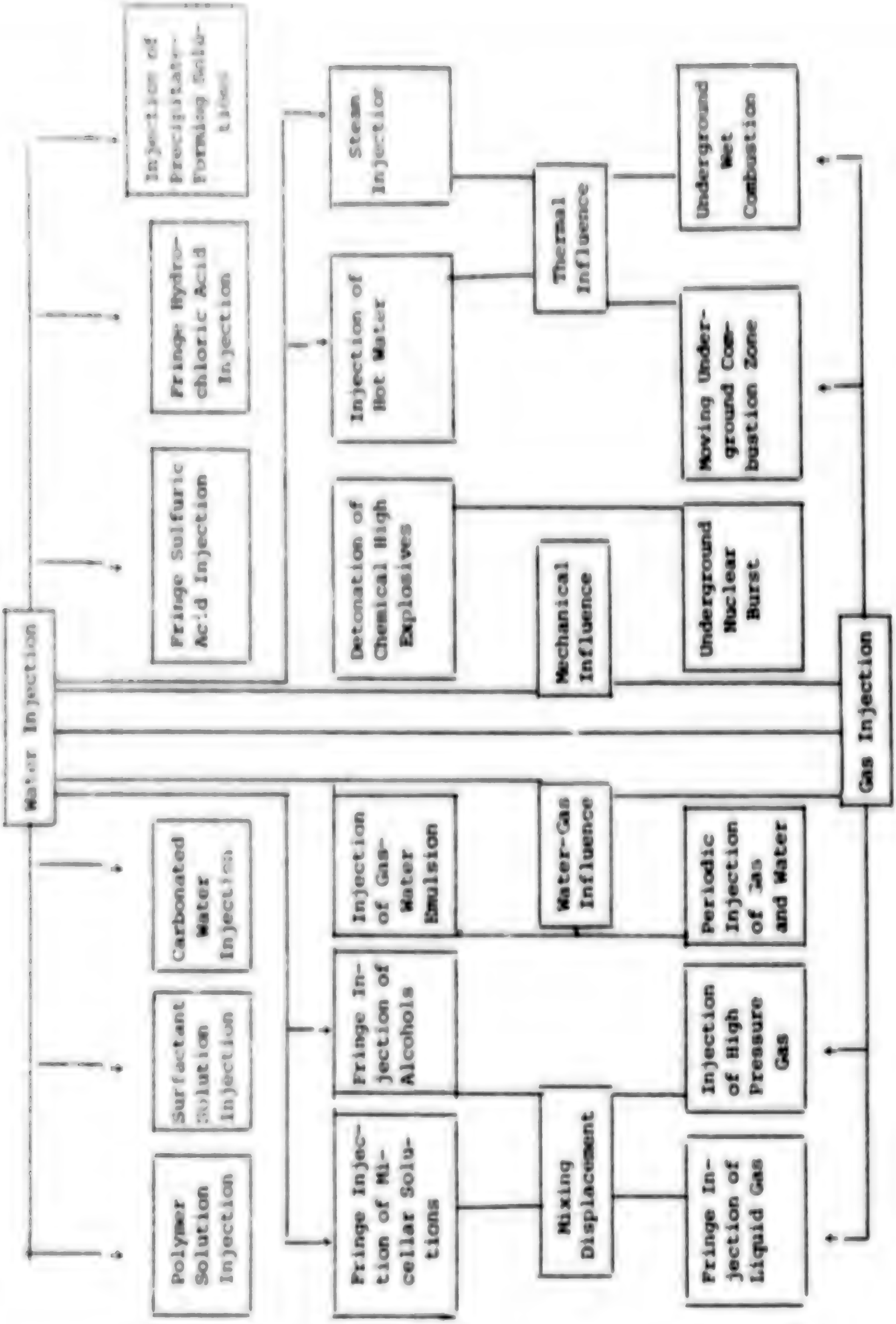
In application to petroleum industry, the specific-purpose program method foresees, in particular, development of concrete scientific-technical and organizational programs promoting attainment of assigned goals in the sector's development--satisfying the current and long-range needs of the national economy for oil and petroleum products (see the article "Scientific-Technical Progress in Petroleum Industry and the Methods of Its Planning," NEFTYANIK, No 2, 1980). The VNIIOENG [All-Union Scientific Research Institute of Petroleum and Gas Industry Organization, Management, and Economics] has developed integrated programs for various subsectors of petroleum industry. The journal NEFTYANIK will acquaint the reader with some of these programs. This first article is devoted to the problem of raising the proportion of underground oil reserves extracted.

The problem of increasing the oil output factor arose in connection with the fact that the methods presently used in oil extraction do not permit removal of all reserves contained in the subsoil. Thus according to estimates of many researchers, given the existing methods of development the final oil output of the USA's oilfields will not exceed 0.35. A higher final oil output is expected from the USSR's oilfields due to extensive application of reservoir flooding methods from the very beginning of exploitation, but even in this case more than half of the explored reserves will remain unextracted.

At the same time considerable material-technical, financial, and labor resources are being expended to seek, discover, and achieve industrial operation of new oilfields. Moreover the outlays of these resources are increasing from year to year in connection with efforts initiated in new, as a rule sparsely populated regions with difficult natural and climatic conditions, where in addition to drilling exploratory and production wells we must lay pipelines, erect power transmission lines, and build roads, residential settlements, and small and large cities. Highly skilled laborers, engineers, and technicians must be attracted to these regions. We note that in every region, oil extraction first grows at a high rate, then it achieves a maximum, and finally it begins to decline. By this time both individual oilfields and the region as a whole shift to a stage of low oil extraction levels, and the expensive structures can no longer be utilized at full load. But there is still oil in the ground at this time! This is why increasing the degree to which the reserves are extracted is transforming into an important national economic problem: At the present scale of production, an increase of just 1 percent in the final oil output factor would be equivalent to discovery of a new petroleum extracting region and initiation of its exploitation.

The most broadly employed methods today for increasing the oil output involve injection of a working agent into the oil-bearing bed; this agent must perform two functions. First, it must replenish energy in the bed necessary to move the oil to the bottom holes of the wells, and secondly it must displace (flush) the oil out of its porous medium. To perform the first function, we pump water, gas, or a combination of water and gas into the bed as an energy carrier, in a volume sufficient to maintain reservoir pressure throughout the entire period of oilfield exploitation. These two working agents can satisfactorily complete the second function as well, but only if favorable conditions are present. Gas and ordinary (fresh or reservoir) water can be used to displace petroleum with sufficient completeness from minute pore channels, if the viscosity of the oil in the bed is low, and if the beds are homogeneous and are typified by high permeability. In real production situations, we rarely encounter such favorable conditions. Usually the beds are heterogeneous, they have poor reservoir properties, their geological structure is complex, and they contain petroleum exhibiting higher and high viscosity. In all of these cases we have to seek additional methods for influencing the bed in order to raise the final oil output factor.

Because the presently existing methods for influencing beds with the goal of increasing the oil output are diverse, we must first of all classify them. One extensively employed classification system is based on the mechanism of influence; in this system, methods are divided into physical, chemical, physicochemical, mechanical, thermal, and hydrodynamic. But this classification does not account for the function of the working agent as an energy carrier maintaining reservoir pressure. Moreover many of the agents used today interact in such a complex manner with reservoir oil and the rock skeleton that it is difficult to establish some single mechanism of influence, or even one principal mechanism. It would be more logical to use a classification system in which all methods of influence are subdivided first of all into two major groups on the basis of the energy carrier employed--water


Water Injection
Polymer Solution Injection
Surfactant Solution Injection
Carbonated Water Injection
Fringe Sulfuric Acid Injection
Fringe Hydrochloric Acid Injection
Injection of Precipitate-Forming Solutions
Fringe Injection of Micellar Solutions
Fringe Injection of Alcohols
Injection of Gas-Water Emulsion
Detonation of Chemical High Explosives
Injection of Hot Water
Steam Injection
Mixing Displacement
Water-Gas Influence
Mechanical Influence
Thermal Influence
Fringe Injection of Liquid Gas
Injection of High Pressure Gas
Periodic Injection of Gas and Water
Underground Nuclear Burst
Moving Underground Combustion Zone
Underground Wet Combustion
Gas Injection

injection and gas injection (see diagram). Each of these forms of influence is being improved by different methods.

Presently our country uses water injection as the most widespread method for raising oil output. The oil yield from oilfields using flooding has attained 90 percent of the total yield. And in the next 10-15 years this method will continue to be the principal one. Therefore the researchers are directing their efforts at improving mainly the flooding methods. These improvements are being made by adding chemical reagents that improve the oil flushing and displacing properties of water, addition of polymers raising the viscosity of water, surfactants, carbon dioxide, and sulfuric and hydrochloric acids. These reagents are injected in the form of a narrow fringe, which is subsequently pushed through the entire reservoir by ordinary water.

Injection of dry gas at moderate pressures is less effective than injection of water, since this gas is more mobile than reservoir oil, and thus it breaks through quickly to production wells via highly permeable intercalations. Moreover it does not flush petroleum out of the pore channels with sufficient completeness. However, if we inject a certain volume of liquid gas (propane, butane, or their mixture) before the dry gas, the picture changes dramatically: Dissolving in the petroleum, liquid gas displaces it completely out of the pore channels, and then it is displaced in turn from the bed by the dry gas. Vaporizing in the dry gas, it also is completely extracted from the bed. A similar effect can be enjoyed by injecting gas enriched by light oil fractions into the bed.

Mixing displacement can also be achieved with water injection. But for this purpose a fringe of alcohols (ethyl or methyl) must be created at the displacement front. The alochol mixes with petroleum in some proportion, and it insures its complete displacement. The alcohol fringe is itself displaced completely by water, inasmuch as alcohol also mixes with it in some proportion. But alcohols are expensive, and this is why we are searching for cheaper reagents capable of dissolving in oil and water. One of them is micellar fluid.

Thermal methods of influence promoting a decline in viscosity of bed oil and, consequently, increasing its mobility and achieving better displacement of it from the pore channels, involve injection of hot water or steam, or the use of a moving zone of combustion. In the latter case thermal energy is produced directly within the bed by burning of part of the petroleum. The process of underground combustion is maintained by injection of air, oxygen, or air enriched with oxygen into the bed.

Methods of mechanical influence upon a petroleum-burning bed that create a system of cracks within it, and which connect isolated petroleum-bearing sections among each other and with well bottom holes are distinguished as separate group. A system of cracks may be created by hydraulic disintegration of the bed, by detonation of a chemical high explosive charge, or by an underground nuclear burst. Subsequent exploitation of the oilfield would require maintenance of reservoir pressure by one of the schemes described above (injection of water or gas, and so on).

There are methods that make equal use of both working agents--water-gas methods of influence upon the bed. The variants of this combined influence are extremely diverse, but there are two basic methods--injection of a gas-water emulsion, and periodic injection of gas and water. In the first case the injected water contains minute gas bubbles which interact in the bed with residual film petroleum, and dissolving within it, they raise its mobility. Moreover such water itself exhibits low mobility, which promotes equalization of the rates of displacement of petroleum from intercalations exhibiting different permeability. When gas and water are injected periodically, we achieve the same effects, except that the emulsion is formed in the bed itself.

Besides methods based on the principle of displacing petroleum by a working agent, there are others based upon other principles. Thus for example shaft methods of petroleum extraction have already enjoyed practical use.

And so, there are dozens of methods of influence upon a bed that increase the final oil output factor and the current rate of oil extraction. And this is no accident. For each oilfield or for each group of oilfields of the same kind, we must select that system of development and those methods of influence which would produce the maximum impact. In the end, this is an economic problem, and it cannot be solved apart from economic indicators. We must first of all utilize those methods which would produce the greatest payoff for every ruble spent. In general, were economic limitations not to exist, we could consider extraction of 100 percent of the oil from the subsoil today. We can even name the methods for doing so. By pumping gasoline or liquid gas in unlimited volumes into the bed instead of water, we could flush all of the oil out. Laboratory experiments demonstrate that the same can be achieved by injecting steam in large volumes. We can drain out a bed completely by bringing the oil-bearing rock to the surface by the shaft method and subsequently extracting the petroleum. However, this is all purely theoretical. In reality, as was noted earlier, we cannot solve the problem of increasing oil output without considering the cost.

Therefore economics impose two basic requirements upon working agents intended to maintain reservoir pressure and on reagents improving the flushing and displacing properties of the working agent: the possibility for obtaining them in large quantities, and at relatively low cost. It is precisely because of these two requirements that flooding methods have come into the greatest use, even though gas injection and thermal influence had appeared earlier. Even today, the methods for increasing oil output based on gas injection and the thermal methods of influence require sizable capital investment for the construction of compressor stations and boiler rooms, and installation of expensive equipment. Moreover the procedure is sufficiently complex; this pertains especially to control of underground zones of combustion.

The flooding methods demonstrated their industrial feasibility, simplicity, and high economic effectiveness from the very beginning. Water is available in sufficient quantities in practically all petroleum extraction regions, which has made it possible to solve the problem of maintaining reservoir pressure on the scale of the entire country. And in order to improve the oil flushing and displacing properties of water, we add various chemical reagents. We do have to remember, however, that given the present volume of water being injected, we need hundreds of thousands of tons of these reagents. But the possibilities for their industrial production are not unlimited, no matter what the level of development of the national economy is. This is precisely why the choice of one reagent or another and its use in concrete geotechnical conditions is primarily an economic problem. Moreover all methods of influence based on injection of working agent into the bed (see diagram) require the drilling of additional wells, which inevitably increases the capital-output ratio of the sector. In this case the high capital-output ratio of petroleum extracting industry is also distinguished by the fact that most structures must be built within a short time at the very beginning of an oilfield's exploitation. Their maintenance and the acquisition of materials and reagents mean a significant increase in current expenditures. But the return from the invested capital accrues gradually, over a relatively long period of time.

The economic impact the national economy enjoys from developing an oilfield can be defined in the simplest case by the following formula:

$$I = P-(C+EK),$$

where: I--economic impact per ton of petroleum extracted, C--cost, K--unit capital investment per ton of petroleum, E--normative coefficient of the effectiveness of capital investments in the national economy, P--the price of crude oil.

We can see immediately from this formula that development of an oilfield produces a positive impact only in the event that C+EK, which is called the corrected outlays, does not exceed the price set for crude oil. The total cost of commercial oil consists of wages and deductions for social security, energy outlays, and outlays on current repairs of underground and surface equipment, on demulsification, on conveyance and storage of the petroleum, and on collection and transportation of gas, shop and general industrial expenditures, and deductions for geological exploration. Cost also includes depreciation of wells and other fixed capital.

Thus cost accounts for both current expenses and capital investments taking the form of depreciation deductions. Why, then, are capital investments included twice in the formula used to define economic impact? The problem is that the volume of oil extracted must not only pay for current expenses and fixed capital, but it must also insure a standard profit from the capital investments. The normative coefficient of the effectiveness of capital investments in the national economy is assumed equal to 0.12 (its reciprocal--the time required for full return of capital investments--is

8.3 years) ; consequently the planning organizations will approve capital construction of only those facilities for which the time of investment return does not exceed the normative value.

In a socialist economic system, the price on oil is determined on the basis of the socially necessary outlays of labor. It varies with time depending on the conditions under which oil must be extracted, and the price in the world petroleum market should be thought of as its limiting value. If the corrected outlays per ton of oil exceed the world prices, then it becomes economically more advantageous to import it. After establishing the limiting values of the outlays in this fashion, we can determine the feasibility of using different methods for increasing the oil output of individual oilfields.

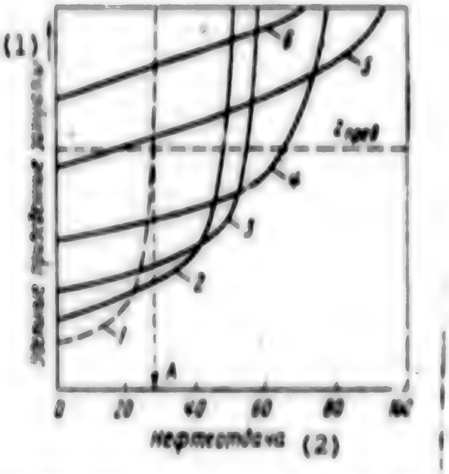
As an example let us examine the dependence of corrected outlays, C+EK, on oil output (see figure) for different methods of influence applied to a model oilfield (the horizontal broken line indicates the maximum permissible level of corrected outlays). At first, when the oilfield is exploited through the natural energy contained within the bed, the unit corrected outlays are low. As additional wells are drilled and the oil extraction rate drops due to a decrease in reservoir pressure, the outlays per ton of extracted oil increase, and in the end they attain their limiting value. At this moment exploitation of the deposit ceases, and the final oil output corresponds to point *A*. However, exploitation of this oilfield by ordinary flooding results in a higher oil output at the moment at which exploitation is ceased, and in this case growth in unit outlays on oil extraction in the final stage of exploitation results from a natural increase in the concentration of water in the product. For the oilfield under examination here, application of water-gas mixture injection methods and thermal methods of influence is found to be economically feasible. But mixing displacement and injection of high pressure gas are economically unjustified, though they do produce a higher oil output.

Dependencies similar to those shown in the figure are plotted for each oilfield or each group of identical oilfields. They are used, with a consideration for the material resources available for the period of the integrated program, to establish the most effective methods for increasing the oil output and the allocation of these resources among the different oilfields and oil extraction regions.

The chosen variants are placed at the basis of specific-purpose program planning, which is carried on in the following sequence:

Directive organs establish the goal on the basis of the national economy's demand for petroleum--insuring additional oil extraction, ΔQ, through the use of new methods of influence upon the bed;

to achieve this goal, the extracting organization writes up a program explaining the set of oilfields to be involved and the distribution of new



Dependence of Corrected Outlays on Oil Output:
1--exploitation by dissolved gas; *2*--water injection;
3--water-gas mixture injection; *4*--thermal methods;
5--high pressure gas injection; *6*--mixing displacement;
$z_{пред}$--maximum permissible outlays

Key:

1. Unit corrected outlays
2. Oil output

methods of influence among them; in this case it complies with the principle of achieving a given additional extraction volume at least expenditure of material-technical, labor, and financial resources.

It remains to be said in conclusion that as the price on crude oil increases, the permissible outlays on its extraction also increase. Consequently as time goes by, the quantity of deposits at which it is advantageous to use the new methods for increasing the oil output factor increases, and the assortment of practically usable methods broadens.

COPYRIGHT: Izdatel'stvo "Nedra", "Neftyanik", 1980

11004
CSO: 1822

BURIED REEFS AS SOURCE OF OFFSHORE OIL, GAS DEPOSITS

Baku VYSHKA in Russian 17 Jul 80 p 3

[Article by N. Khalilov, head of the laboratory "Gipromorneftegaz," doctor of geological and mineralogical sciences: "Reefs and Oil"]

> [Text] Plans are being developed to drill deep offshore wells on new oil- and gas-bearing deposits.

About 5-6 years ago it was still believed that accumulations of oil and gas were possible only in the anticlinal (less often in the monoclinal) folds. These natural "traps" of oil were found and worked, but the large part of natural wealth thus remained untapped. However, recently both in our country and abroad, the fund of anticlinal structures has been sharply reduced, and in certain regions the deposits of these structures have been completely exhausted.

Thus, it became necessary to select new, thick oil- and gas-bearing deposits. As a result of long and painstaking searches the geologists successfully found zones of natural fuel accumulation. They turned out to be buried reefs.

The experience of foreign countries (United States, Canada, Mexico, Indonesia, Libya) where study and search for oil and gas in the reef deposits have already been underway for many years, shows that these rocks possess splendid collector properties. Their penetrability sometimes reaches 7,000 millidarcy, and their average porosity is 10-12%.

The good filtering qualities of the reefs determine the high output of the wells. One of them, for example, drilled in the Gulf of Mexico (United States) on the Sierro-Asul field at a depth of 3,700-4000 meters went into operation with a daily output of 42,000 T of pure oil. In the United States, 150 fields of oil and gas have been discovered in buried reefs. The total supplies of oil that can be extracted are estimated at 1.5 billion tons. In Canada, 75% of all the extracted oil is also obtained from reef deposits. It is important to stress that the percentage of yield of fuel from the nonanticlinal structures is 52%, and with the use of secondary methods--85%.

Our country is also searching for oil- and gas-bearing reefs. In the past several years good results have been obtained. Deposits of fuel have been discovered, in particular, in the Volgogradskaya, Saratovskaya, Ural'skaya and Orenburgskaya oblasts. The depth of occurrence of the reef deposits in these regions does not exceed 3,000 meters. The average well output is 100-200 tons of oil, 600,000 cubic meters of gas, and 200 tons of condensate per day.

What kind of reefs are these since they were buried?

Millions of years ago organisms existed that dwelled together, and in enormous numbers, in colonies so to speak. During their vital activity, from generation to generation they created immense structures several hundreds of kilometers long. These structures are reefs. At a certain geological time the bottom of the sea dropped, and as a result the development conditions of the reefs changed. They ceased their existence and were buried under a thick layer of sea deposits, limestone and clay.

Do such buried reefs exist on the territory of Azerbaijan? Yes, of course. Study of the geological structure and paleositutation demonstrated that in certain parts of our republic especially in the Caspian Sea, in different geological epochs reefs were formed. This, in particular, is indicated by certain rock samples obtained at the Saatly superdeep borehole. From the core sample taken in the interval 2,830-3,530 meters, the geologists determined, that at this depth a set of limestone exists of reef origin, mainly constructed by corals of the lower Cretaceous period. And this once again confirms the fact that in the Mesozoic era on the territory of Azerbaijan, the conditions for the development of reef deposits for the formation in them of oil and gas deposits were very favorable.

Based on all of this, upon the assignment of the all-union industrial association "Kaspmorneftegazprom" in "Gipromorneftegaz" development was started of plans for the construction of exploratory wells for the new types of structures. One of them will be set up in the eastern sector of the Caspian on the area of LAM [Laboratory of Aerial Methods] with planned depth of 6,000 meters. Here, as the studies showed, there are all the prerequisites for discovering promising deposits. The second well with planned depth of 5,950 meters will be drilled on the area of Yuzhnaya-2.

It should be stressed that the design selected for these wells will prevent possible complications in the shaft, and will guarantee the discovery on Yuzhnaya of a productive layer before the roof of reef deposits. During the drilling out of these rocks, for the first time in practice it is proposed that vertical seismic profiling be used. In the lower intervals we plan to use bed-testers, acoustic and gas logging methods, and other latest methods in studying oil-saturated beds.

It seems that it is necessary to turn the work on studying buried reefs to the dry land as well. First of all, here it is necessary to clarify the mechanism for their formation, and to establish the laws governing the spread of its different types over the section of the area. At the same time it is important to make a detailed study of the structure of these deposits, and to isolate the primary objects in them in order to successfully implement the driving of deep development wells.

The reefs that were buried in the sea are new, very promising deposits. And it seems that in the near future they will determine the main trend in searches and exploration of the Caspian oil.

9035
CSO: 1822

"DRUZHBA" OIL PIPELINE TO WESTERN SOCIALIST COUNTRIES COMPLETED

Moscow IZVESTIYA in Russian 25 Jun 80 p 3

[Article by V. Vadimov: "Created by Innovators"]

[Text] The trans-European oil pipeline "Druzhba" is the very first for the start-up schedules among the underground mainlines laid over the western boundary of our country. It is not inferior in level of automation to the most modern steel arteries. This is a considerable credit to the transport innovators. Without stopping the active equipment they introduced an automated system for controlling the technological processes over the entire length of the route. One can judge the effectiveness of what has been done by the fact that now all the information for more than 500 parameters is being collected in the "Druzhba" dispatcher's office. It gives an idea of how the oil pumping is going from the shores of the Volga to the fraternal countries, Czechoslovakia, Poland, Hungary and the GDR.

The economic benefit from the introduced system lies not only in the increased supply of black gold over the boundary. The steel "subway" uses a large number of powerful electric motors. Thanks to automation, this equipment has started to operate under the most optimal patterns, which has already permitted a saving of over 82 million kilowatt-hours of electricity.

The creative genius of the innovators has a broad scope. On the whole, over 1,500 suggestions have been received, of which a considerable number have found practical application and have increased the transport potentialities of the pipeline.

9035
CSO: 1822

UNIFICATION OF OIL DRILLING COMPLEX SPEEDS UP WELL CONSTRUCTION

Moscow IZVESTIYA in Russian 25 Jun 80 p 6

[Article: "To the Oil Treasures"]

[Text] After implementing a bold engineering idea, the members of the komsomol-youth brigade of derrick installers of N. Markin from the second Nefteyugansk administration reduced the construction time for exploratory wells.

Nature has dependably hidden the oil wealth of Tyumen'. In order to reach it, an artificial island has been made among the swamps, the derrick installers and drillers "travel" over it with a 800-ton drilling unit, creating a cluster of wells.

In accordance with the plan, only the derrick block moves on rails. The boiler houses, power substations and pumping block remain in place. The installers are forced to lose time joining the pipelines. And what if the "auxiliary facilities" are united to the borehole, bringing it under one roof and placing it on rails? The brigade of N. Markin took it upon themselves to fulfill the unique operation.

Next to the derrick a special platform was equipped, on which the parts and assemblies were assembled in enlaged blocks.Then they were raised by hoisting cranes to the installation site. The cover for the equipment was made on order of the brigade at Uralmashzavod.

Now, in order to make the next move, it is enough to press a button on the control panel, and the drilling complex is sent to the new site. The experience of the brigade is being used by many collectives of Tyumen' oil workers.

9035
CSO: 1822

FUELS

SHALE-BURNING POWER PLANT SHOWS PROMISE

Tallinn SOVETSKAYA ESTONIYA in Russian 20 Jul 80 p 2

[Article by K. I. Senchugov]

[Text] The Estonian SSR's shale fuel industry enjoyed swift development in the years immediately after the war. First there was the "Kokhtla-Yarve" shale TETs, and then the "Akhtme" TETs. And, finally, the world's first giant of shale power production--the Baltic GRES, followed by the Estonian station, the output capacity of which surpassed that of its older brother--1.6 million kilowatts.

Konstantin Ivanovich Senchugov, the director of the Estonian GRES, was there at the birth of power engineering in Soviet Estonia. First, after graduating from the Moscow Power Engineering Tekhnikum, he was employed as an engineer at an electric power plant in Ellamaa. Soon after, while continuing his training at the Moscow Correspondence Polytechnical Institute, Konstantin Ivanovich became chief of a shop, and chief of production at the "Akhtme" TETs. His promotion to shop chief at the Baltic GRES was a new step in his engineering activities. And in December 1963 he began serving as director of the Estonian GRES, which was still under construction at the time, and which is presently named in honor of the 50th anniversary of the USSR; he heads a 2,000-member collective of the country's leading shale power engineering enterprise.

Konstantin Ivanovich Senchugov has been awarded many USSR orders and medals. He is a distinguished power engineer of the Estonian SSR, a candidate for membership to the Estonian SSR Communist Party Central Committee, and a member of the Narva City Party Committee Office.

The republic's shale power engineering industry developed entirely before K. I. Senchugov's eyes. Here is what the director of the Estonian GRES imeni 15-Letiye SSSR to say.

The initiation and development of power engineering in the Estonian SSR was difficult mainly because we had no experience upon which we could rely. It was simply nonexistent--both here in our country and abroad. We were the pioneers. And it is always harder for those who come first.

We acquired our experience only as a result of operating the power production units of the Baltic GRES. We acquired it and we took it into account when we planned our next station--the Estonian GRES. This in particular was the task of the management of the GRES, which was being built under my directorship at that time. We tried to help the planners, and we were able to make some contributions. Now the Estonian GRES is in no way inferior in appearance and in quality of work to the best stations operating on noble, high-calorie fuel--coal and fuel oil.

Planning the station, we devoted much attention to protecting the environment. Triple filters that clean exhaust entering the atmosphere and huge stacks, 250 meters high, permitted us to reduce the concentration of shale ash to a minimum--one gram per cubic meter, which is less than the maximum permissible concentration. Consider this in the light of the fact that within a year the station burns 12.5 million tons of shale in its eight boilers. Of this amount, 5.5 million tons are shale ash.

Three years ago we built an ash handling unit, and since then we have been supplying more than a million tons of ash each year for agricultural needs. It has been estimated that 1 ton of ash introduced into acid soil raises the yield of cereal grains by 5 tons in the course of 5 years. The Baltic GRES supplies ash to the fields of the Estonian SSR and other Baltic republics, and to a neighboring construction materials combine producing panels and blocks for residential and industrial buildings. We ship the ash to ten oblasts in the Russian Federation and the Belorussian SSR. The very fact that we are utilizing the ash--the actually free mineral fertilizer substituting for expensive lime meal--is the will of the times. It is by this means that we solve the problem of making integrated use of shale, to include not only its organic part--that is, its flammable part--but also its mineral fraction.

Our main task is to insure continuous scheduled delivery of electric energy to the unified power system of the country's northwest. In 1979 we surpassed the planned output capacity--8 billion kilowatt-hours, having delivered 2.5 billion kilowatt-hours more. The Baltic GRES also produces almost as much energy each year.

Imagine that the smallest republic of our great country makes such a great contribution to the energy balance, concurrently making it possible to economize on scarce, expensive fuel, fuel oil in particular. This is a great achievement of the republic's shale power engineering industry.

It is no accident that a group of the republic's power engineers was nominated for the USSR State Prize in a decision of the Presidium of the

Estonian SSR Academy of Sciences. They include the chief of "Estonglavenergo," E. Aman, who formerly served as director of the Baltic GRES during its construction, and then was employed for a long time as chief engineer of the power system; the administration's present chief engineer Kh. Vassil, Estonian GRES chief engineer M. Gudkin, and a number of other comrades are in this group as well. In my opinion, the very fact of its nomination says a great deal.

We found great inspiration in the words of greeting addressed by Leonid Il'ich Brezhnev to laborers, engineers, technicians, white collar workers, and party, trade union, and Komsomol organizations of the fuel and power enterprises of the Estonian SSR in connection with their early attainment of their targets for 4 years of the five-year plan associated with extraction of fuel shale and production of electric power.

Recently the collective of the Estonian GRES reported early fulfillment of its five-year plan. Electric power produced since 11 June has been credited to the 11th Five-Year Plan. Before the end of the year we will additionally produce about 5 billion kilowatt-hours of electric power, which will permit us to complete the five-year target by 112 percent. And now, on the eve of the 40th anniversary of the republic, we can happily report satisfaction of socialist pledges adopted in honor of this noteworthy date in economization of energy and fuel.

That we, the pioneers, had no examples to follow is true. But now specialists from many countries are learning from our example. Back in 1968 the United Nations held its first symposium in Tallin on the extraction and utilization of fuel shale. Two hundred seventy delegates from 29 of the world's countries took part in the work of the symposium. The symposium participants also visited the Estonian GRES. Consider that fact. Organization of such a representative forum in the Estonian SSR under the UN flag is evidence of the worldwide recognition and international significance of the work of our republic's miners and power engineers.

The first experimental power engineering device processing shale into high-calorie fuel--shale oil--was recently put into operation at our station. I am certain that as soon as the parameters of this device attain industrially feasible proportions, specialists from many countries of the world will visit us here in Narva. Our shale processing system is unique, and it offers great promise.

Energy. The invisible current of this powerful electric river constantly flows into our homes so as to bring light, it is channeled into the plants and factories so as to place machines, machine tools, and machine units into operation. This perpetual motion is being insured through the efforts and energy of many Soviet people, to include those laboring at the Estonian GRES. They include, for example, Lev Petrovich Kurygin, chief of the production-technical section; Boris Leybovich Gamburg, chief of the power engineering shop; Olev Parts, deputy chief of the repair shop; Vitaliy Vasil'yevich Zabolotnyy, chief of the boiler and turbine shop; Vilen Iosifovich Klibanov, deputy chief engineer. And, finally, they include our laborers--the operators, the turbine specialists, and the repairmen. Their selfless labor is permitting the station collective to successfully reach the targets posed to it in the five-year plan. Our collective is fully resolved to meet the 26th CPSU Congress honorably.

11004
CSO: 1822

SHALE OIL PRODUCTION DEFENDED

Tallinn SOVETSKAYA ESTONIYA in Russian 23 Jul 80 p 2

[Article by B. Tyagunov, Shale Laboratory director, Energy Institute imeni G. M. Krzhizhanovskiy, and V. Chikul, Institute senior designer, director of operations for Assimilation of the UTT-3000: "Power Technology: The Path to Assimilation"]

> [Text] Construction of an experimental facility processing shale for the Estonian GRES is continuing in Narva in compliance with the Fundamental Directions for Development of the USSR National Economy in 1976-1980. Articles, reports, and materials submitted by workers' correspondent offices on this topic have been published many times in SOVETSKAYA ESTONIYA. Today colleagues of the Power Engineering Institute imeni G. M. Krzhizhanovskiy describe the present situation.

In February of this year the first trial run of the UTT-3000 machine unit was made, and the first products were obtained--shale oil and high-calorie gas.

The test was conducted in difficult winter conditions, and most importantly, it was performed in the presence of many loose ends (absence of steam of the required pressure, no operational communication between the central console and the workplaces, absence of some monitoring and testing instruments and automatic systems, unfinished production buildings, and so on).

A number of shortcomings in manufacture, assembly, and design of auxiliary equipment were revealed in dry runs and in the test run. No defects were revealed in the production process in the first and subsequent runs. All of the basic equipment of the distillation section--the reactor, the aerojet combustion chamber, and the dryer, the parameters of the production process, its aerodynamics, and so on did not cause any interruptions.

Following the first run, another four were made before the end of June. All subsequent interruptions were associated only with mechanical problems with auxiliary equipment and the facility's electrical system (the shale feed system, worm conveyers, air and gas heaters, and so on).

The UTT-3000 units, which have a processing capacity of 1 million tons of shale per year, or 3,000-3,300 tons per day, are unique. Nowhere else in the world do such units exist at the moment. The UTT-500 at the Kiviyli Plant, which attained an average processing rate of 530-540 tons per day in some years, had been the largest. It is only recently abroad, mainly in the USA, that experimental (not producing) shale processing facilities capable of handling 900-1,000 tons per day were designed ("Tosco" with a solid heat carrier, "Paraho," "Union Oil," and others). Erection of a generator processing 1,000 tons of shale per day is nearing completion at the "Slantsekhim" Association imeni V. I. Lenin in Kokhtla-Yarve. There are plans in the USA for designing machine units using a solid heat carrier ("Tosco") with a capacity of 10,000 tons, and the "Lurgi" Company (FRG) is working on similar facilities handling 1,000 tons per day. But for the moment these are just plans and proposals, while at the Estonian GRES, assimilation has already begun.

A new deadline (1981) has been established for assimilation of the entire production complex, to include two UTT-3000 units together with shale oil purification divisions, gas turbine fuel production operations, and a rebuilt power block running on liquid shale fuel with an output capacity of 200,000 kilowatts.

However, the rate of construction and installation, of tying up the loose ends, and of eliminating the revealed defects is far from compatible with the deadline set for the complex' assimilation. As of 1 June 1980, installation of the second machine unit had not yet been completed, and only 66 percent of the foreseen capital investments were assimilated. The plan for the present year does not foresee completion of all construction and installation jobs. The commissioning of the shale oil purification divisions is stretched out over all of 1980. The boiler of the power block is to be rebuilt by May 1981, and construction of waste treatment facilities is to end in 1981.

This situation, which is especially aggravated by slow elimination of revealed mechanical defects in auxiliary equipment, is not only threatening failure of the deadline for assimilation of the shale processing facility, but it also generates groundless rumors suggesting that the UTT-3000 machine units do not work, and exaggerations as to the difficulties of their assimilation.

The activity of the opponents of shale processing--the proponents of direct combustion of Baltic shale--has risen dramatically in connection with this. On television and at various conferences (mainly in the absence of specialists in shale processing), the processing of shale into oil is pictured as a step backward in comparison with direct combustion; it is asserted that direct combustion is the only method of multiple use of shale that is practically harmless to nature.

We can understand the concern scholars of the Estonian SSR Academy of Sciences show for nature in the republic's northeastern region, where the shale extracting and processing enterprises and practically all shale-burning electric power plants of the region are located, and which is now extremely polluted by the wastes and exhausts of these enterprises.

Also understandable and valid were the insistent statements by Estonian SSR Academy of Sciences academicians I. Epik and E. Lippmaa concerning the danger of contaminating the water basins with sulfides contained in ash from the experimental-industrial UTT-500 facility of the "Kiviyli" Plant.

Subsequent studies performed by the Tallin Polytechnical Institute and the Estonian SSR Academy of Sciences Institute of Thermophysics and Electrophysics, and presently being continued by the Power Engineering Institute imeni G. M. Krzhizhanovskiy, the All-Union Scientific Research Institute of Hydraulic Engineering imeni B. Ye. Vedeneyev (VNIIG), the Scientific Research Institute of Shale, the Estonian SSR Academy of Sciences Institute of Chemistry, and the Scientific Research Institute of Construction, has confirmed the possibility of obtaining ash from a UTT facility containing unfavorable components in amounts no different from those in ash from existing electric power plants.

This is achieved either by creating the appropriate conditions for operation of the UTT units, or by additional oxidative combustion of hot ash in a separate apparatus. Both processes were checked out in test facilities of the Tallin Polytechnical Institute, the Institute of Thermophysics, and the Energy Institute imeni G. M. Krzhizhanovskiy. The first method was found to be more preferable, more effective, and cheaper, and what remains to do is to assimilate this method on an industrial basis in the UTT-3000 units, which were planned with a reserve of air blast capacity and a sufficiently broad range within which production conditions could be adjusted.

What we need now is a little patience to wait for assimilation of the UTT-3000 units, so that we could judge the merits and shortcomings of shale processing on the basis of the actual work done by the industrial machine units, and make responsible decisions concerning the direction in which shale power engineering is to develop. This is the sole correct way to resolve the issue. And in this situation the attacks upon the new production process, which have risen up with new force and, to put it mildly, with not very substantial grounds, can hardly be called useful.

Much has been written about the merits of multiple use of shale involving shale oil production, and we will not repeat ourselves.

Comparing direct combustion with the processing of shale for oil, we should not forget the following:

1. The Estonian and Baltic shale-burning electric power plants, and the "Kokhtla-Yarve" TETs and the "Akhtme" TETs, are presently the main sources of contamination of the atmosphere by sulfur and ash wastes in the eastern part of the Estonian SSR.

2. At the moment we have solved the problem of using only half of the ash formed through combustion of powdered shale. The other half of the ash (the proportion is now up to 70 percent) must be dumped--ways for utilizing it have not been found.

3. Ash dumps and hydraulic ash removal systems are also substantial sources of contamination by alkaline waters which, as recent meticulous studies showed, contain the same harmful components found in ash from the UTT-500, but in smaller quantities.

A state of rivalry between direct combustion of shale and its processing for oil is in general a positive factor of scientific and technical progress. But this must be healthy rivalry, healthy socialist competition, in which even the losers do not lose out, inasmuch as this competition promotes general progress.

Power engineers have always felt all efforts at improving direct shale combustion, at creating a new method for burning it in a fluidized bed, at creating new methods of shale processing, and at improving existing methods, to be useful, and they have always supported them.

Unfortunately combustion in a fluidized bed has still not emerged beyond the stage of small-scale experimental research, the research was often abandoned in general, and we must consider that the research was started many years before work on oil shale processing began. Except for the UTT, in 30 years not a single alternative method for shale processing has been created, and it is only in the last 10 years that work on a new fluidized bed processing method was started. This work is also proceeding extremely slowly, and it also has not gone beyond the testing stage.

We should not forget that the Soviet Union has shale not only in the Estonian SSR and in Leningrad Oblast, but also in the Ukrainian SSR, the Belorussian SSR, the Volga, the Komi ASSR, and Siberia. The shale reserves are extremely significant, but a large proportion of this shale cannot be burned directly owing to high sulfur content or too high an ash content. But we must begin using shale from new deposits: Petroleum is getting more expensive, its main sources shifted into Siberia a long time ago, and we must find a substitute for it--something that can be done essentially only with shale. Typically, extensive work being done with shale abroad (in the USA, FRG, Brazil, Canada, France, Morocco, and so on) in the last 10-15 years has been directed exclusively at obtaining oil and gas.

In the Estonian SSR, the shale processing facility of the Estonian GRES is being used to solve the problem of effectively using not only Baltic shale but also shale from many other promising deposits in the country's European part.

11004
CSO: 1822

CONSTRUCTION OF TYUMENSKAYA OBLAST GAS PIPELINES UNSATISFACTORY

Moscow STROITEL'NAYA GAZETA in Russian 18 Jun 80 p 2

[Article by Yu. Goryainov, Deputy Chief, All-Union "Tyumengazprom" Association: "Exactingness and Dependability"]

[Text] The Tyumen' North is responsible for the entire growth in extraction of natural gas in the country today. Capital investments into the "Tyumengazprom" Association increased by 2.4 times in the five-year plan. Meanwhile, however, the present quality of construction and installation jobs on the gas pipelines raises deep concern.

About half of the total volume of work of the Ministry of Construction of Petroleum and Gas Industry Enterprises is in Tyumenskaya Oblast. The routes cross thousands of kilometers of marshes, water obstacles, and permafrost. For practical purposes, the work can proceed only in winter. And what does this mean?

Welding specifications applicable to large-diameter pipes call for a welding temperature from +15 to -15°. But 40° frost persists over a long period of time on the northern routes. Weak marshy ground is present almost everywhere. The procedures of building pipelines in such conditions are a new and unexplored area, and the schedule for building the mainlines is extremely tight.

However, we do know something else. Subcontractors represented by the Glavsibtruboprovodstroy and other subdivisions of the Ministry of Construction of Petroleum and Gas Industry Enterprises possess experienced, knowledgeable personnel on the Tyumen' routes. Why, then, are cases of waste, loose ends, and breakdowns frequent at their facilities?

The first and, I think, main reason is the low output capacity of the builders. Absence of the reserves which should always be available on pipeline routes also has its effect. The breakdown of a heavy bulldozer or other machine unit or mechanisms on a pipeline route is always a disaster. Often there is nothing to replace the machine. And so critical interruptions occur between different jobs.

As an example trench digging, welding, insulation, ballasting, and filling must proceed simultaneously. Only in this way can we guarantee the dependability of the installed pipeline. However, only the work of the welding columns contained within the route construction system are able to satisfy the flowline principle. Associated subdivisions either fall behind or find themselves far ahead.

Imagine that the earth movers get ahead. The trench is dug and abandoned, and the ground becomes rock-hard in the frost. Then clods of earth begin to fall into the snow-filled trench. And then in summer the trench transforms into a drainage ditch, with the pipes bobbing about in the water.

Deviations from the production schedule are occasionally necessary, but sometimes they are in no way justified. Often a subcontractor assumes a doubtful path which does little to hasten the rate of construction. On the contrary the effort results in a need for major modifications.

As an example the plan foresaw installation of the Bogandinskaya compressor station on fill. In order to save time, the builders set up the approaches and construction area in a hurry, and they immediately began installing the station. What was the consequence of skipping over the preparatory stage? Operation of the installed turbines had to be postponed for several months. With the first warmth of spring, an important unit of the station subsided. It settled down in unstable marshy soil. In his haste, the subcontractor had failed to remove all of the turf from beneath the fill. It took much more time than had been expected to erect a foundation beneath the facility, which was now already assembled.

The story is the same for other compressor stations. We cannot help asking: Could the contractors have made competent engineering preparations within the territory of the compressor station in proper time? It would be more correct to reply that they were obligated to begin with such preparations.

The causes that can explain their wrong choice of action are abundant. There was no equipment to move such a large amount of dirt, and there were no roads. And so they decided on the rash steps.

Unfortunately this case is not an exception. As a rule the subcontractors begin their work without an awareness of the production plan. In the best case all they have to work with are the recommendations of the planner. Usually an official from the main administration or trust appears at the construction site and directs all of the work, basing himself on personal experience, on intuition. He takes chances on the off-chance.

There is an abundance of cases in which the pipeline layers knowingly set the stage for waste in their haste by ignoring the remarks of technical inspectors and the designers. Sometimes weights are suspended from the pipe only for the sake of appearance, doing nothing to secure it down in the trench. While the quality of welded seams is checked with instruments, we must rely upon the conscientiousness of the workers in all other operations, for example in the filling of the trenches. And their conscientiousness is not always what we would want it to be.

I believe that control by the ruble must be applied more forcibly to those who do wrong. But gross production is still the principal stimulus for the pipeline layer. The more he welds, digs, and insulates, the more money he receives. And if the work is found to be wanting half a year later, he does not suffer any deductions. In the same way that a reward for a job well done is not post-dated. I think that this is improper. Guarantees of the reliability of the built pipelines must be rewarded. And vice versa.

Representing the client--the "Tyumengazprom" Association, I discovered several dozen bared sections of pipe in just a single section of the route between kilometer markers 194 and 298 along the existing multiple gas pipeline system stretching from Nadym to Punga. This winter, engineers representing the technical inspection office wrote up the builders laying the mainline between Urengoy and Gryazovets 46 times for poor work. The contractors informed us that prior to the end of the working season they had corrected only 15 of the discovered problems. And yet the new section was already being filled with gas.

From my point of view the gas pipelines should be accepted for operation in two stages. The first should consist of temporary operation. In the second, the pipeline should be certified for permanent operation following a certain period of time, in which all loose ends are revealed and completely eliminated. This is the same way things are done in railroad construction.

The time has come to think about creating, in Tyumenskaya Oblast, not temporary pipeline construction administrations, but a permanently operating company which could effectively monitor the quality of the work.

11004
CSO: 1822

GAS PIPELINE EXTENDED IN LITHUANIA

Moscow IZVESTIYA in Russian 25 Jun 80 p 3

[Article by I. Kasyukov, in-house correspondent of IZVESTIYA: "'Severnoye Siyaniye' in the Baltic Region"]

> [Text] The builders of the gas mainline Vil'nyus-Kaliningrad have started laying the pipeline.

In the Baltic region "Severnoye siyaniye" is the name of the branch of the gas pipeline that emerges from the main bed of the underground fuel river, which starts in Ukhtinsk and the West Siberian fields. In Lithuania, the natural gas is used by hundreds of enterprises and plants, and over half of the urban and rural population. Tongues of flame from "Severnoye siyaniye" have reached Riga and Liyepai.

Today the gas pipeline is being laid in the Kaliningradskaya oblast. The 330-kilometer gas artery is being built by the Vil'nyus construction-installation administration of the trust "Lengazspetsstroy." The head of the administration, N. Popov, acquaints us with the situation at the mainline under construction:

"It remains to overcome the Neris River near Kaunas. On the route there are a total of about 200 large and small water obstacles. A no less troublesome matter is construction of passages under the bed of automobile and railroads. We encounter such "intersections" in many places. About one-third of the route passes over forest tracts and swampy sections. This year it remains to complete the main work on the first stage of the route, a 100-kilometer segment Vil'nyus-Kaunas."

The pipeline lies in a black arrow on the green fields and meadows. The seam of the trench stretches like a brown snake up to the very horizon. At the 70th kilometer the machine operators are laying the pipeline into the trench with four 100-horsepower machines, easily controlling the multiton, almost meter diameter pipeline. Bitumen is not used for insulation, rather a polymer film.

The high skill of the machine operators has come with the years. Machine operator of the insulating unit K. Bagdonas, like the machine operators of the pipelayers I. Gutkovskiy, V. Pososhkov, V. Bozdeyev and V. Zagorovskiy have 10 and more years of work on such construction sites behind them.

"In honor of the approaching 40th anniversary of the restoration of Soviet power in Lithuania we are committed to laying no less than 15 kilometers of pipeline before the end of the month," says the head of the work, technician A. Zaytsev.

Lengths are being joined at the section of the brigade of bearer of the Order of Labor Glory T. Lysh. Each length is made of three 10-meter pipes. They are welded at the site, while the finished "lengths" are brought to the route by powerful truck tractors. The lengths are now being joined with the help of a special mechanism created by the designers of one of the Moscow institutes.

"In the fall we will begin to move the working columns to the second section of the Kaunas-Shakyay route," the chief welder of the administration B. Kuz'min shares his plans. "There it is a stone's throw to the Kaliningradskaya oblast."

We contacted the deputy chairman of the Kaliningrad oblispolkom V. Verbitskiy by telephone.

"The communal services of the oblast," he reported, "are actively preparing for the arrival of the natural gas. Street gas mains are being built, and networks are being laid in the buildings. Of the 33 industrial enterprises many are already ready to receive the blue fuel."

9035
CSO: 1822

[illegible]

LASER FINDS METHANE LEAKS ON GAS PIPELINE

Moscow IZVESTIYA in Russian 9 Jul 80 p 3

[Article by [illegible] Vukovich, special correspondent of IZVESTIYA: "Laser Seeks Methane"]

[Text] With the construction of underground mainlines for transporting natural gas great distances, the municipal network is also expanded on which the fuel is fed to the industrial enterprises and residential dwellings. Therefore it became necessary to have technical means of observing the good condition of the pipelines and finding methane leaks.

The designers of the production association "Polyaron" in cooperation with scientists created a laser gas-analytical sensor. It was installed in the cab of the four-wheel drive vehicle "GAZ-66" or "UAZ-452." The automobile laboratory moves along the pipeline at a speed up to 10 kilometers an hour and takes air samples all the time through a sampler. If there is a large concentration of methane in it, a sound signal is triggered. It becomes clear what place repairs need to be made in.

Now the plant designers are finishing work on a more advanced instrument model. At the same time, together with the scientists of the Donetsk polytechnical institute the task is being solved of using a laser sensor to control waste gases in the blast furnaces. This will help to protect the air medium from pollution and trap valuable components discharged into the atmosphere.

9035
CSO: 1822

WORK ON YARKOVO COMPRESSOR STATION AHEAD OF SCHEDULE

Moscow IZVESTIYA in Russian 22 Jul 80 p1

[Article by V. Il'in: "Handwriting of the Experts"]

> [Text] Having started a labor watch dedicated to the impending 26th Party Congress, the workers of the association "Sibkomplektmontazh" started production tests ahead of schedule for the second phase of the Yarkovo compressor station of the gas pipeline system Urengoy-Chelyabinsk-Petrovsk-Novopskov.

It is a workers' holiday at Yarkovo: the first five of the eight powerful machines have been started. Every builder remembers such days for a long time.

A weighty labor victory has been attained in honor of the 26th CPSU Congress. But the work rate is not dropping. The hum of machines does not cease at the enormous construction platform, and the glows of the electric welders flash. Work is being done on a continuous schedule, and advanced methods of production are being widely employed.

"All of our labor-intensive operations have been mechanized," relates the brigade foreman of the installers N. Banishevskiy. "We are enlarging the assemblies of aggregates and structures assembled beforehand. This is how the installers, M. Byyanov, A. Shevkoplyas and others work that are known to the entire country. This is why we are firmly confident that we will finish the facility 10 months ahead of the planned period."

When you see how the installers of Anatoliy Shevkoplyas are working you involuntarily admire the skill with which they control the multiton blocks of enormous units. This is not the first year they have all been working together. Many have become coauthors of efficiency expert's suggestions and improvements. The enlarged assembly is also the collective idea of the brigade. The installers gave a real battle to the "rubble."

"Our brigade," says A. Shevkoplyas, "decided to mobilize all its reserves and potentialities in order to meet the impending party congress with [illegible] are thinking of increasing in the near future the attained [illegible] of 1.5 of the norm per shift."

The initiative of the leading brigades is being taken up by the collectives of [illegible] of the Ministry of Construction of Petroleum and Gas Industry Enterprises. The faster the supply of fuel to the industrial regions of the European sector of the country is increased, the more electricity, cement and steel, and chemical products the national economy will receive.

Several compressor stations are being built on the gas-transport system Urengoy-Novopskov. The early start-up of these facilities promises great benefit.

They consider the most rapid attainment of this goal their contribution to the competition for the worthy meeting of the 26th CPSU Congress.

9035
CSO: 1822

MINER COMPETITION RESULTS ANNOUNCED

Moscow TRUD in Russian 24 Jul 80 p 4

[Article by N. Budnikov, secretary, Central Committee, Coal Industry Workers Trade Union, and Yu. Skvortsov, deputy director, Production Operations and Wages Division: "Miners' Goals"]

[Text] Examining the proceedings of the June (1980) Plenum of the CPSU Central Committee, the participants of meetings and worker assemblies held in enterprises of the sector unanimously accepted the report to the plenum by CPSU Central Committee General Secretary, Comrade L. I. Brezhnev as a guideline for action in the struggle to successfully complete the 10th Five-Year Plan, and for an honorable welcome for the 26th CPSU Congress.

In the current five-year plan, many of the sector's labor collectives accumulated rich experience in ways to raise the effectiveness of coal mining and improve work quality. As always, participants of the movement of the "Thousanders" made the greatest contribution to the overall success; this movement is rightfully being led by mining teams and sections which had signed, at the beginning of the year, an agreement to participate in the competition to extract not less than 500,000 tons of fuel from a working face.

Most of them, as can be seen from the accompanying table, are confidently fulfilling their responsibilities, they are working rhythmically, and they are serving as an example of highly effective utilization of equipment, scientific organization of labor, and creative use of advanced coal mining procedures. We should emphasize immediately that these collectives are not working in unusual conditions. Big coal requires big labor. As the mining and geological conditions grow more complex with every year, tasks of increasing difficulty are imposed upon the miners. This is why it is not any bit easier to mine 1,000 tons of coal in a day today than it was yesterday, even with reliance upon the past experience of innovative comrades participating in the competition. And today this goal requires a maximum return from every team member and section, the highest level of occupational skill, and active, persistent work by engineers, technicians, and efficiency experts to improve labor organization, improve the use of equipment, and eliminate losses of working time.

Work results in the first half of the year for team and section collectives that had signed an agreement to compete in extraction of 500,000 tons of coal (shale) or more from one working face in the final year of the five-year plan:

Team Leader and Section Chief	Mine, Production Association	Pledged for the First Half-Year	Actual Quantity Mined (Thousands of Tons)
V. [illegible]	Krasnyy Partizan Mine, "Sverdlovantratsit"	605.0	654.1
N. [illegible]	"Mayskaya" Mine, "Rostovugol'"	570.0	609.2
[illegible]	Raspadskaya Mine, "Yuznkuzbassugol'"	500.0	592.7
M. Reshetnikov	Zyryanovskaya Mine, "Yuzhkuzbassugol'"	500.0	554.6
N. Skrypnik	Mine imeni Frunze, "Donbassantratsit"	515.0	526.4
A. Salamatin (Section Chief)	Mikhaylovskaya Mine, "Karagandaugol'"	514.3	483.9
A. Kolesnikov	Molodogvardeyska Mine, "Krasnodnugol'"	467.5	472.8
A. Polishchuk	Trudovskaya Mine, "Donetskugol'"	448.7	458.1
V. Bardyshev	Novokuznetskaya Mine, "Yuzhkuzbassugol'"	365.0	456.9
P. Yermakov (Section Chief)	Vorgashorskaya Mine, "Vorkutaugol'"	453.0	451.8
[illegible] Smirnov	Yubileynaya Mine, "Gidrougol'"	420.0	441.4
V. Devyatko	Raspadskaya Mine, "Yuzhkuzbassugol'"	500.0	431.9
[illegible] Zhukov	Polysayevskaya Mine, "Lenikskugol'"	380.2	427.3
[illegible]	Zyryanovskaya Mine, "Yuzhkuzbassugol'"	350.0	420.3
Ye. Vilimas (Section Chief)	Intinskaya Mine, "Intaugol'"	401.0	404.9
A. Kan (Section Chief)	Maykudukskaya Mine, "Karagandaugol'"	362.4	394.1
V. Ignat'yev	Krasnolimanskaya Mine, "Dobropol'yeugol'"	376.7	388.5
N. Gladkikh (Section Chief)	Shakhtinskaya Mine, "Karagandaugol'"	394.1	387.6
Ye. Vertel' (Section Chief)	Vorgashorskaya Mine, "Vorkutaugol'"	350.0	378.9

V. Fedorenko (Section Chief)	Mine imeni Kostenko "Karagandaugol'"	318.1	378.3
R. Stakheyev	Nagornaya Mine, "Gidrougol'"	333.0	364.4
N. Fominykh (Section Chief)	Komsomol'skaya Mine, "Vorkutaygol'"	354.2	363.2
A. Kanev (Section Chief)	Oktyabr'skaya Mine, "Vorkutaugol'"	345.4	363.0
Ye. Bondarenko	Urgal'skoye Mine Administration, "Primorskugol'"	343.0	351.2
A. Del'yan	Severnaya Mine, "Vorkutaugol'"	321.0	345.4
V. Dronov (Section Chief)	Vorgashorskaya Mine, "Vorkutaugol'"	332.0	344.1
A. Titov (Section Chief)	Podmoskovnaya Mine, "Novomoskovskugol'"	315.0	343.2
I Sorochinskiy	Oktyabr'skaya Mine, "Vorkutaugol'"	345.4	342.8
M. Balychenko	"Estoniya" Mine, "Estonslanets"	316.5	337.2
Ye. Drozdetskiy	Nagornaya Mine, Gidrougol'"	306.0	324.7
Yu. Bronnikov	Severnaya Mine, "Vorkutaugol'"	315.4	324.3
Yu. Razlivayev (Section Chief)	Mine imeni Kostenko "Karagandaugol'"	307.1	322.5
I. Sinner	Novokuznetskaya Mine, "Yuzhkuzbassugol'"	310.0	320.5
A. Zhaleyko (Section Chief)	Zapadnaya Mine, "Intaugol'"	294.5	317.3
I. Larchenko	Estoniya Mine, "Estonslanets"	302.0	314.2
K. Markelov	Mine imeni 50-Letiya Oktyabrya, "Gukovugol'"	286.0	313.9
V. Shmakov (Section Chief)	Mine imeni Kostenko, "Karagandaugol'"	279.0	313.8
A. Romanyuta (Section Chief)	Severnaya Mine, "Karagandaugol'"	289.9	312.2
A. Asyutchenko	Mine imeni gaz. "Sotsialisticheskiy Donbass", "Donetskugol'"	276.6	311.3
N. Gubin	Gukovskaya Mine, "Gukovugol'"	270.0	311.2
A. Vakhnin (Section Chief)	Vorkutinskaya Mine, "Vorkutaugol'"	304.9	307.2
A. Nikitin	Nagornaya Mine, "Gidrougol'"	285.0	306.0
V. Ivanov	Akhtme Mine, "Estonslanets"	283.5	303.6

A. Uvarov	Ayutinskaya Mine, "Rostovugol'"	265.2	300.8
I. Safronov	Pervomayskaya Mine, "Kuzbassugol'"	316.7	300.4
N. Afanas'yev (Section Chief)	Mine imeni Kostenko, "Karagandaugol'"	288.6	294.1
A. Zirko (Section Chief)	Shakhanskaya Mine, "Karagandaugol'"	270.5	294.0
V. Babashnikov	Yur-Shor Mine, "Vorkutaugol'"	275.8	290.7
E. Putkov	Komsomolets Mine, "Leninskugol'"	282.4	288.7
A. Nikolayev (Section Chief)	Mine imeni 50-Letiya Oktyabr'skoy revolyutsii "Karagandaugol'"	282.9	286.9
G. Motsak	Mine imeni Kosmonavtov, "Donbassantratsit"	258.9	286.4
E. Vakht	Viru Mine, "Estonslanets"	272.0	285.4
A. Vausepp	Estoniya Mine, "Estonslanets"	277.0	283.7
Kh. Noorlind	Estoniya Mine, "Estonslanets"	279.0	281.7
A. Peet	Estoniya Mine, "Estonslanets"	281.0	280.8
V. Petrov (Section Chief)	Mine imeni Gorbacheva, "Karagandaugol'"	267.0	276.2
V. Korotkov (Section Chief)	Intinskaya Mine, "Intaugol'"	242.0	276.0
I. Shvets	Kuznetskaya Mine, "Leninskugol'"	255.8	267.0
D. Spirin	Zarechnaya Mine, "Gidrougol'"	284.0	266.7
I. Kupran	Akhtme Mine, "Estonslanets"	254.4	263.8
I. Ushakov	Viru Mine, "Estonslanets"	255.2	257.6
S. Lyan (Section Chief)	Molodezhnaya Mine, "Karagandaugol'"	237.5	246.3
N. Korotayev	Tyrganskaya Mine, "Gidrougol'"	235.9	243.6
A. Karzhov	Inskaya Mine, "Gidrougol'"	270.0	243.3
Yu. Kubaychuk (Section Chief)	Maykudukskaya Mine, "Karagandaugol'"	234.0	242.3
A. Dushchenko	Glubokaya Mine, "Rostovugol'"	264.5	240.6
S. Tolkachev (Section Chief)	Vorgashorskaya Mine, "Vorkutaugol'"	287.0	238.2

G. Avraimov	Mine imeni RKKA, "Dobropol'yeugol'"	235.1	237.9
A. Shakulin (Section Chief)	Komsomol'skaya Mine, "Vorkutaugol'"	239.8	236.4
B. Kulikov	Raspadskaya Mine, "Yuzhkuzbassugol'"	275.0	234.2
S. Semenov (Section Chief)	Vorgashorskaya Mine, "Vorkutaugol'"	247.0	232.8
G. Abramov	Butovskoye Mine Administration, "Makeyevugol'"	246.7	225.4
Yu. Yamov (Section Chief)	Podmoskovnaya Mine, "Novomoskovskugol'"	265.0	221.4
T. Suleymanov (Section Chief)	Mine imeni 50-Letiya Oktyabr'skoy revolyutsii, "Karagandaugol'"	212.1	208.5
V. Glagolev (Section Chief)	Zapadnaya Mine, "Intaugol'"	253.1	205.9
V. Belik (Section Chief)	Mine imeni Gorbacheva, "Karagandaugol'"	202.6	198.3
P. Vasilevich	Korkinskaya Mine, "Chelyabinskugol'"	230.5	191.3
N. Kultyshev	Mine imeni 7 Noyabra, "Leninskugol'"	183.0	187.9
I. Medvedev	Tash-Kumyr Mine, "Sredazugol'"	230.2	173.1
S. Suleymanov (Section Chief)	Mine imeni 50-Letiya Oktyabr'skoy revolyutsii, "Karagandaugol'"	240.5	149.5
V. Kolokol'nikov	Raspadskaya Mine, "Yuzhkuzbassugol'"	280.0	106.5
L. Kon'kov	Gramoteinskoye Mine Administration, "Oblkemerovougol'", RFSFR Ministry of Fuel Industry	255.3	255.8

Not all of the collectives were prepared for work in the new, more-complex conditions. In a number of cases the initiative of the workers was not provided with sufficient organizational and technical support, or dependable, timely engineering support, as a result of which the total number of teams working at a load of 1,000 tons per day decreased by almost 20 percent in the last 3 years. However, not only did the volume of fuel mined in this case not decrease, but it even grew due to the shock work of the "Thousanders." Their share in underground extraction exceeds 40 percent, and the number of workers involved is about 13 percent.

All of this persuades us that the movement of the "Thousanders" is continuing to produce new experience, it is acquiring qualitatively new content, and it is revealing new reserves for raising production effectiveness and work quality. This is why organization of efficient dissemination and utilization of the experience of the best workers continues to be the most important task of mine and association executives and trade union committees.

In the first half of the year more than 2,500 teams, sections, shops, shifts, and entire mine collectives, and about 100,000 coal industry laborers already reported completion of the five-year plan. In response to a decision of the June (1980) Plenum of the CPSU Central Committee, practically every unit, shift, and team has defined measures for improving the work and reviewed previously adopted pledges with an eye on increasing them. Miners of mining teams headed by delegates to the 25th CPSU Congress were among the first to assume the shock pre-congress labor watch. Thus miners of M. Chikh's team pledged to extract 6.55 million tons of anthracite between the beginning of the five-year plan and the opening of the congress--this is an outstanding achievement. Miners of A. Kolesnikov's team planned to extract their 5-millionth ton by the 63d anniversary of October. Workers of V. Murzenko's team decided to complete the year's obligations and deliver a million tons of fuel 3 months before the end of the present year--by USSR Constitution Day.

Miners of V. Ignat'yev's and A. Polishchuk's teams reviewed the initial pledges they adopted in honor of the party congress, and they decided to attain an annual output of a million tons. The same sort of pledge was adopted by A. Popov's team of the "Leninskugol'" Association's Mine imeni 7 Noyabriya, which provided support to participants of the pact of the "Eighty-seconders." Competing for successful completion of the assignments for the five-year plan and for 1980, mining teams led by A. Kaminskiy and V. Yerokhin in Donetskaya Oblast, A. Gatsenko in Rostov, A. Gagkayev, A. Potapov, V. Burkov, N. V. Sorokin, and N. A. Sorokin in Vorkuta, Ye. Baldyrev in Novomoskovsk, and others pledged to mine not less than 500,000 tons of fuel in honor of the party congress, and they have already been credited with from 220,000 to 340,000 tons. Recall that last year 99 collectives reached this goal.

The collectives led by Yu. Yamov and V. Glagolev were placed in a difficult situation due to poor preparation of the cutting area. The former are having to exert an unjustifiably large amount of effort to control flooding of the longwall due to poor preparatory drying, while the latter lost much time correcting mistakes made by the tunnelers, and now due to the absence of concrete, substantiated engineering recommendations on managing the unstable hanging wall, they are forced to seek an effective solution to this problem on their own by trial and error.

The report on the results of the year's first quarter mentions the selfless efforts being undertaken by V. Kolokol'nikov's team to surmount the consequences of the breakdown of a new KM-130 complex. But the situation is not yielding to correction. The second team of "Raspadskaya" Mine, led by B. Kulikov, is also working hard with similar equipment.

Miners of N. Gubin's team and of N. Shmakov's, I. Medvedev's, and A. Nikolayev's sections have reduced their rate somewhat. The causes of such deterioration of the work are often organizational in nature. As an example the collective of A. Nikolayev's mining section at the Mine imeni 50-Letiya Oktyabr'skoy Revolyutsii worked at maximum output throughout all of 1979 and the first quarter of the present year. Significantly ahead of schedule, it dug out the cutting area by mid-April. But the mine management failed to implement prompt measures to accelerate preparations for subsequent work for the miners, and thus the planned longwall will not be placed into operation until August. Therefore in order to "compensate," the section's miners are forced to remain idle; they are now working in a previously closed-up longwall in difficult mining and geological conditions, and then they will have to make up their mining losses, which are entirely on the conscience of the production organizers.

Determining the program of action aimed at creating the necessary conditions for highly productive labor in each team and in each section, business managers and trade union committees are obligated to eliminate the shortcomings, heed the lessons of the past half-year, raise the responsibility of the specialists, and intensify the role played by permanent production conferences, the creative public, and worker assemblies in solving the present problems of labor organization and accelerating introduction of progressive technology and advanced production skills.

11004
CSO: 1822

GEOLOGISTS RECEIVE PRAISE, SUPPORT

Moscow PRAVDA in Russian 12 Jul 80 p 1

[Editorial: "Geologists Dedicated to the Five-Year Plan"]

[Text] The labor of a geologist is enwreathed by romanticism. Wherever people of this profession have worked productively, cities and towns rise up, and the deposits they explore produce coal, petroleum, metals, and ores without which the national economy cannot develop successfully.

Comrade L. I. Brezhnev noted at the November (1979) CPSU Central Committee Plenum that our country now holds first place in the world in extraction of many forms of fuel and raw materials, in production of cast iron, steel, cement, and mineral fertilizers, and in relation to a large number of other indicators. Geologists of the RFSFR, Ukrainian SSR, Uzbek SSR, and other republics have made a major contribution to what has been achieved. Persistently fulfilling the assignments of the five-year plan, they are making an effort to expand and strengthen the raw material base--mainly the industry's fuel and energy sectors.

The party has assumed the course of increasing the country's power potential. The national economy must be supplied with petroleum, coal, and gas even more dependably. The reference is primarily to swift development of West Siberia--the country's principal petroleum and gas extraction base. Greater efforts are being made in regions of territorial-production complexes undergoing formation in the country's European north, and in the zone of construction of the Baykal-Amur Rail Mainline. This is where today's geologists are working. They are working on integrated specific-purpose programs, concentrating their efforts on the main avenues of the search for mineral resources.

This approach to the work is helping the explorers of the subsoil to complete their tasks more successfully and to achieve good results. Many collectives have completed their five-year assignments ahead of schedule. New deposits have been discovered in the West Siberian petroleum and gas province and on the Buzachi Peninsula in the Kazakh SSR, and explorations are under way at the gas deposits of the Turkmen SSR and new coal beds in the Kansk-Achinsk, Southern Yakut, and Kuznets basins.

The present scale of development of the national economy dictates the need for preferential development of the mineral raw material base. The most important task of geological exploration organizations, note decisions of the 25th CPSU Congress, is to raise the economic effectiveness of exploration, and the quality with which the reserves of minerals are prepared for exploitation. Much has been done and is now being done in this area. But the possibilities are far from fully utilized, and some targets are not being met. Thus petroleum scouts of the RFSFR Ministry of Geology failed their deep-drilling assignment last year. The effectiveness of exploratory operations is low in a number of Primorskiy Kray and Armenian organization. Today the USSR Ministry of Geology and its subdivisions must concentrate serious attention precisely on those areas in which delays are being permitted, and they must mobilize the existing resources in order to correct the situation.

The methods of planning and economic stimulation have recently been improved in the geological sector, which has generally produced positive results: Assignments are being completed more effectively and precisely, and labor productivity has risen. The executives of geological services and party organizations should continue to show concern for raising the effectiveness of the labor of the subsoil explorers, and they should direct their efforts at achieving high end results.

Scientists are making a major contribution to the sector's development. They are now assisted by space, geophysical, and analytical equipment, and computers. The efforts of the scientists are highly valued by the party and government, and a number of the best collectives have earned the USSR State Prize. The role of science in raising the effectiveness of exploratory operations is rising. The scientists must solve the fundamental and applied problems of geology, mainly those associated with predicting the presence of new deposits in a given concrete region of the country, and they must improve methods for seeking minerals.

In the time left before the end of the year, a great volume of work must be completed to prepare the reserves of petroleum and gas in a number of new regions in West Siberia, in the country's European part, and in the Yakut ASSR.

There are many skilled, competent specialists among the subsoil explorers. The whole country is familiar with the names of the best leaders of drilling teams that have completed the equivalent of six annuals plans. They include Hero of Socialist Labor N. Glebov from Tyumenskaya Oblast, USSR State Prize laureates M. Avramets from the Ukrainian SSR and A. Nitsak from Irkutskaya Oblast, and many others. Their experience and their work methods are a powerful factor in raising the labor productivity of the geological explorers, and its effectiveness and quality. A more energetic effort should be made to introduce this experience, to develop socialist competition, to raise responsibility for satisfaction of pledges, and to strengthen discipline and organization in all geological subdivisions. It is the party organizations and communists that must be primarily concerned with this.

Geologists must work in difficult conditions in the field. Naturally the question of reducing personnel turnover is acute. We can be successful in this area only in the event that the geological explorers do in fact see that their needs are being satisfied. For this to be true, we must work faster to solve problems associated with improving material and technical support to geologists, and we must build more housing for them. Those party and business organs that keep an eye on these problems and make sure that plans are completed are doing the correct thing.

Geological explorers are rightfully awaiting support from the ministries and departments producing drilling and geophysical equipment and instruments used in exploration and analysis of minerals. As an example the USSR Gosplan must provide help if we are to eliminate disproportions between the construction of production facilities and housing for geologists and the growing volume of exploratory operations. If we are to extensively introduce the progressive method of electric drilling discussed recently in PRAVDA, the Ministry of Electrical Equipment Industry and the Ministry of Chemical and Machine Building will have to make an effort.

Soviet geologists are conducting a perpetual search. Extensively introducing instrumental methods, they are trying to raise the effectiveness and quality of geological explorations. Here lies a guarantee that the plans of the five-year period will be completed and that we will successfully reach the sector's main goal--dependably supplying raw minerals to the national economy.

11004
CSO: 1822

FUELS

EQUIPMENT PRODUCED FOR NEW TYUMEN' TOBOL'SK PETROCHEMICAL PLANT

Moscow NEDELYA in Russian No 28, 7-13 Jul 80 p 2

[Article by I. Kalashnikov, correspondent of the press center of the USSR Ministry of Chemical and Petroleum Machine Building: "Address: Tobol'sk Petrochemical"]

[Text] An enormous caravan of trailers moved along the concreting laid to the moorage on the shore of Lake Onegin, behind the powerful tractors "Uragany." Equipment of almost 100 meter length, similar to a multistage space rocket was lying on the trailers. This equipment is designed for one of the most important construction sites in West Siberia. The Tyumenskaya oblast, the largest oil supplier in the country, will refine the liquid fuel itself; the region is receiving such development in accordance with the decisions of the 25th CPSU Congress. The Tobol'sk petrochemical kombinat that is to be built will become the flagship of the industry. Five giant fractionating columns for it weighing from 500 to 700 tons have been assigned for manufacture by the collective of the V. I. Lenin Petrozavodsk Machine Building Production Association.

"The assignment was somewhat unexpected," says the chief engineer of the association V. Bobylev. "The enterprise mainly specializes in producing paper-making equipment. And this is powerful equipment for oil refining. We had to make major preparations: a special shop was built, it was equipped with the latest equipment, an assembly stand was made; suddenly we had a giant thermal furnace, x-ray chamber, control instruments and devices. The best welders and assemblers were appointed for fulfillment of the important order. Schedules were set up after assigning all the periods and executors to details. Three-shift, round-the-clock work was organized. The equipment and assemblies for them were assembled on the principle of continuous, line production. The association was helped by specialists of the Ye. O. Paton Institute of Electrical Welding, and the technology of other scientific institutions.

Many innovations were introduced. At the suggestion of the innovators, sheets of rolled items were prewelded into enlarged chart-blanks, blocks were assembled from them, and the blocks into columns. The precise marking of the equipment was done by a laser beam.

The first sheet of rolled products had only been marked when the people of Petrozavodsk were already preparing for the unloading of the colossal equipment. Together with the builders they laid a concrete road up to the plant moorage on the lake. The moorage was equipped with powerful hoisting devices. They were worried about special transportation. They used the chassis from the Il-62 airplane as wheels for the trailers, equipped the trailers with a rotating device which gave the entire tractor and trailer rig good maneuverability. And now the command was heard: "Let's go!"

Ahead there were a thousand miles over a blue mainline, over Lake Onegin, rivers of Svir' and Ladoga, the equipment has already been delivered to the Leningrad port, and from here to the northern sea route, to the Ob' inlet.

9035
CSO: 1822

INCREASED USE OF INTERNAL RESERVES SOUGHT AT MACHINE-BUILDING PLANT

Moscow EKONOMICHESKAYA GAZETA in Russian No 28, Jul 80 p 6

[Article by Arkadiy Isayevich Kurkovskiy, director: "How to Force the Reserves 'To Work'"]

> [Text] The Kishlinskiy plant is one of the oldest machine building enterprises in Azerbaijan. It manufactures one-third of the products with the state sign of quality. How is the intraplant planning being reconstructed in light of the decree of the CPSU Central Committee and the USSR Council of Ministers of 12 July 1979? What new has appeared recently in the life of the production collective?
>
> The director of the plant, Arkadiy Isayevich Kurkovskiy talks about this in the published article. He has been working at the Baku enterprises of oil machine construction already for 31 years. He has travelled the road from foreman to prominent management leader. Since 1979 he has been the director of the Kishlinskiy machine building plant.

Not so long ago the collective of our plant received the following letter from Urengoy from the komsomol-youth brigade of A. Grekov:

"The geological explorers are writing to you. We are looking for oil and gas in the depths of West Siberia. We are helped a lot in this by the unit 'AzINMASH-37.' We have drilled tens of thousands of meters of rock, and in harsh frost. In short, the operating conditions are the most severe, but the unit continues to serve us faithfully and correctly, until now it has not required a single serious repair. It was made in conscience, strongly and reliably. Our enormous, worker's thanks for high-quality equipment."

This letter was read when the leading brigade of the fitters of Vladimir Kuznetsov was awarded the honor pennant in a triumphant ceremony. Of sumrae. It is pleasant for the Kishlinksiy machine builders to receive such testimonials. They arouse additional energy, and a striving to improve the quality indicators of work. This Vladimir Kuznetsov asserted at the meeting:

"Our brigade, like the entire plant collective, adopted intensive commitments for the final year of the five-year plan. We are trying to work so that the customers are always satisfied with the equipment we make, and to give it greater and better quality."

Regarding the Opinion of the Customer

Now, when we are completing the 10th Five-Year Plan and are preparing for the 11th Five-Year Plan, contacts with the customers have acquired especial importance. We are guided by the decree of the CPSU Central Committee and the USSR Council of Ministers of 12 July 1979, where it has been suggested that the associations, enterprises and organizations jointly with the marketing organizations conduct preliminary work with the consumers and suppliers to determine the nomenclature (assortment) of products for the concluding of economic contracts.

Diverse information on the advantages and shortcomings of the produced equipment, critical notes and desires of the operators make it possible to form assignments more accurately for all sections of the plan.

Great importance at the plant is given to the counterplanning, whose role in the new conditions rose immeasurably. We have accumulated solid experience in using intraplant reserves based on counterplans. I will speak of certain results. In 1979, the Kishlinksiy plant, according to the assignment of the five-year plan was to increase the volume of production by 39.8% as compared to 1975. The realization of the counterplan made it possible to attain a higher limit.

The fulfillment of the counterplan adopted for this year is going successfully. The goal has been set of increasing the production of oil field equipment by 62.7% instead of .1.2% by the 1975 level for the five-year plan.

"Compilation of the annual plan begins from below,from the production associations (enterprises) and organizations," it is stressed in the decree of the party and government on perfection of the economic mechanism. The adopted decision sharply increases the role of the lbor collectives in plan formation. Now, in all the production links of the enterprise a search has been organized for intraproduction reserves, in order to include them into the plan. There are already plans for 1981 and the five-year plan as a whole. They still have a preliminary nature. After a complete and thorough calculation of the internal reserves the contours of the counterplan for the future year will become clearer.

Based on the Enterprise Certificate

I would like to stress that we are speaking precisely of the internal potentialities, whose use depends entirely on the workers of the enterprise. These reserves are diverse. Each separately can prove to be not especially significant. But it is another matter when the reserves are placed in the service of production in a complex manner. We are striving to introduce such a system into our plant.

Its invariable component is the program of organizational and technical measures that is compiled annually. A broad circle of specialists and worker-innovators participates in its development.

Similar programs that guarantee an increase in the efficiency of production are standard in plant practice. But last year in this sense enriched us a great deal. I have in mind the compilation of the certificate of the enterprise. It reflected how we are using the available production facilities.

One can, for example, instal in the shop the most advanced machines and still not obtain the expected yield, if the organization of labor and production is lagging. Therefore, in each of our main shops, in addition to the general plant measures there is a plan for mobilization of reserves. The fulfillment of them is a mandatory condition for the awarding of class places in the intraplant competition. Since in the shop plan for mobilization of reserves an increase is stipulated in the coefficient of shift work of the equipment (differentiated according to groups and sections), then this is taken into account in the approval of assignments for the output of products in the nomenclature and in the intraplant cooperation.

Why do we pay such attention to the coefficient of shift work of the equipment? Because it, in our opinion, reflects very accurately the general condition of the production process organization, and characterizes the situation fairly completely.

Thus, the coefficient of shift work cannot be increased if the percentage of manual labor is high in the shop and if there are many auxiliary personnel. All of these points are not pinpointed in the enterprise's certificate in vain. The mechanism of "fine" regulation of production includes, in particular, NOT [scientific organization of labor], selection of the optimal variants for intrashop and intershop flows, and others.

The course towards an increase in the coefficient of shift work will bear its fruit. Previously in the shop there was a considerable amount of outdated equipment that operated in a one-shift pattern. Today the situation has changed. There are practically no old machines remaining, and the most productive equipment is used in two shifts. However, the organization of full second shifts requires the supplementing of the groups of workers of the main occupation, especially the machine operators.

Where can they be taken from? To increase the total number of workers in the shops means to delay the growth of labor productivity, and the entire situation with the labor resources does not permit this. We have followed the path of reducing the staff of people engaged in auxiliary operations and transferring them to the main production. We use different methods, among them mastery by the auxiliary workers of related occupations, mechanization of labor, multiple-machine maintenance.

The shops, for example, have started to arrange the equipment according to group sign, which yields an excellent result. The interoperational transfers are drastically reduced, and consequently, also the need for auxiliary personnel. We transport parts not "in heaps" but in a unified circulating package; this also produces a rise in labor productivity. On the whole for the past year the number of auxiliary personnel at the enterprise was reduced by 8%. Over 10% of the machine builders have mastered two and more occupations.

Together all the measures have made it possible in the last 2 years to increase the coefficient of shift work of the equipment from 1.54 to 1.67. This year it is planned to bring the coefficient of shift work to 1.74.

Of course, the given indicator is not a limit, but only one of the intermediate boundaries. The internal reserves to increase the coefficient of shift work are there. We can in no way be satisfied with the fact that although there are more multiple-machine operators, their percentage among the workers of the main occupations only equals 9%. There are also not enough workers at the plant that have mastered several occupations. As before the unused potentialities are great for reducing the staff of auxiliary personnel whose specific weight in the total number of Kishinev machine builders is still 46%. It is already evident from this short list what large reserves are available.

A Lot of Work Ahead

The use of internal reserves provides for the organization of smooth work, without standstills and rush work. If we had compiled the certificate of the enterprise in 1978, then we would have to record in it: 70% of the monthly products are manufactured in the third 10-day period, and only 10% in the first. As yet we have not definitively overcome arrhythmia. But the situation is improving. Measures to maintain the smoothness today are included in all the shop plans for mobilization of reserves.

We did not start to get rid of rush work immediately, but with difficulty. According to data for 5 months of this year, in the first 10-day period 34% of the products were produced, in the second--29%, and in the third--37%.

The collective has at its disposal such factor for reducing the losses of working time and denser loading of the equipment as strengthening the labor discipline. In 1978 tardiness and absences from work comprised

1.4% of the working time, in the past months of this year it was 0.96%. It is understandable that the reduction did not occur by itself. This was the result of the great attention of the party, trade-union, komsomol organizations in the questions of increasing labor productivity, improving conditions of working and living, and strengthening discipline.

In the 11th Five-Year Plan the brigade form of organization and stimulation of labor, as is known, must become the main form. In order to create favorable conditions for its introduction the plant has taken, in particular, a course for the organization of sections with a closed production cycle. At similar sections, the brigades whose work is evaluated from the final results, manufacture finished items or individual machine assemblies.

Currently we have 57 active brigades. The example of the first shop indicates the effect produced by the brigade organization of labor. Previously here not more than 18 hoists were assembled per month. Now the complex brigade produces 30 of them, although neither the number of assemblers nor the technical degree of equipping of the section was changed.

The decision adopted by the June (1980) Plenum of the CPSU Central Committee on the convocation of the 26th Party Congress induced in the plant collective a new surge of creative energy. The interested participation of each machine builder in the use of the available reserves is the key to the further increase in efficiency of production and quality of work.

9835
CSO: 1822

FUELS

SUCCESSFUL DRILLING TEAMS IN TURKMENIYA

Ashkhabad TURKMENSKAYA ISKRA in Russian 1 Mar 80 p 2

[Article by K. Orazov, senior engineer of the normative research station, "Turkmenneft'" Association]

[Text] Two years ago more than 10 drilling teams of the "Turkmenneft'" Association supported the initiative of the Al'met'yenskiye surveyors of the depths, "Oil Wells on Stream." The introduction of this essentially new form of organization of labor and socialist competition of tunnelers has given excellent results. All the teams working according to the stream method coped successfully with the plan for 4 years, and some have reported completion of the Five-Year Plan on the whole ahead of schedule.

They include the team of drilling foreman Valeriy Sakhnov from the Kotor-Tepinskiy Drilling Work Administration. They are credited with over 48,000 meters of rock drilled since the start of the Five-Year Plan, 19 wells have enlarged the oil fund, more than 10 of them drilled ahead of schedule. Especially successful was the year 1977, when the team prepared eight high-flow operating wells. In that case all the indicators, both qualitative and quantitative, were good. Thus, whereas in the administration the average time required for construction of a well is 85 days, for Sakhonov's team it is 35.4 days. A saving of about 1.8 million rubles has been obtained from reduction of drilling costs.

What is the secret of success of the leading collective? A new and important matter was started with the conclusion of an agreement on socialist competition with the rigger team of I. Yermolovich. Its essence was that the drillers were required to turn the installation and equipment over after completion of drilling in good, complete condition. And riggers must construct and turn installations over to operations at a precisely designated date, with high quality. Rigorous monitoring of the fulfilment of the agreement was stipulated at once.

The results were felt at once. Whereas in 1977 V. Sakhnov's drillers lost 40 days awaiting a borehole, in 1978 they lost 30 days and in the first half of 1979 a total of 3 days for that reason. The subcontractors, the riggers, also obtained a great gain. Thanks to the timely release of land, buildings and equipment the team of I. Yermolovich constructed three installations above last year's task and turned over 15 drillholes to the tunnelers.

Undoubtedly a role also was played by the circumstance that in both collectives there is a large and permanent working cadre. V. Sakhnov's drillers have worked tobether 10-12 years. The driller A. Rumyantsev and driller's assistants G. Yalgashchev, V. Nazemkin, V. Shaposhnikov, etc, know one another well. Each of them can replace a comrade with a related specialty. Unquestionable authority in the team is enjoyed by the foreman himself, an excellent organizer, a zealous leader who knows how to unify the team and mobilize it for highly efficient labor.

Many years of working together have contributed to mutual understanding and careful use of material resources, a responsible attitude of people toward entrusted responsibility, and discipline. In the team they are eagerly striving for the introduction of new equipment and progressive technology. For example, in the administration they were among the first to use electric drills with intensified hydraulic protection, which permit increasing the tunneling by 30 percent. The Sakhnov team uses new, effective chemical reagents, vibrating screens, bits, etc.

The active participation of the drillers in the concluding stage of drillhole construction, their organization, also contributed to the successful fulfilment of their obligations to their neighbors. Like other collectives in the "Turkmenneft'" Association, they have been taught by instructors methods of organizing drillholes, and use them widely in practice. All eight wells drilled in the past year were organized by V. Sakhnov's team itself. This considerably accelerates their transfer to operations and improves the use of productive fixed assets. In each operation, in each survey cycle, people strive to save minutes of working time.

Meters of tunneling above the plan are generated in that way. The experience of the teams of V. Sakhonov and I. Yermolovich has convincingly demonstrated that innovation is within the capabilities of all collectives of the association. But under the conditions of a serious approach to it, of competition in the organization of labor and of reinforcement of labor and technological discipline in all members of the collective. Unfortunately, lapses of surveyors of the depths have not been eliminated to this day. In the second half of 1979 V. Sakhnov's team was idle for a month awaiting a new installation because their subcontractors, the riggers, were occupied in another area. They were unable to fulfil their obligations and delayed the drillers. It seems that the managers of the administration ought to take into consideration the interests of the competing teams and help the adjustment of the flow in the construction of survey and operating wells. This will permit introducing still more widely and effectively in the administration the initiative of the Al'met'yevskiye surveyors of the depths.

2174
CSO: 1822

CLUSTER METHOD INCREASES OIL OUTPUT

Moscow IZVESTIYA in Russian 5 Jul 80 p 1

[Article by Yu. Petrov: "Generosity of Underground Warehouses"]

> [Text] In the Bashkir ASSR the billionth ton of oil has been extracted. A great contribution to the attainment of this limit was made by the oil and gas extracting administrations "Tuymazaneft'," "Aksakovneft'," and "Arlanneft'."

The drilling derricks go up to the very capital of Bashkiria. One of the young fields, Uzybashskoye, of the administration "Ufaneft'" is located only 40 kilometers from Ufa. Beyond the shoulder of the road is a birch forest, then a pine forest, and a field with densely greenish wheat.

"At the section where we are going to,"relates the head of the production section of the administration, A. Levchenko, "there are 240 wells. If each was placed separately they would not occupy one-hundredth of a hectare, there would not be any forest or pasture land remaining. As you see, both have been preserved, for incline-directed drilling has become our law. At one point, that is called the cluster, there are 16-20 machines. From here the wells fan out towards the side, reaching the wells of 'black gold,' which is under the forest and under the pasture land."

The cluster method is used everywhere in the association "Bashneft'." Spent water is pumped into the bed, which prevents salinization of the soils. The supports for power transmission lines are transferred from the pasture lands to the roadside zone and to the unfruitful sections. The oil workers understand that each oil field is the site of birth of grain, forests, flowers and the site of dwellings.

The underground beds increase the yield.

9035
CSO: 1822

MEASURES TO INCREASE EFFICIENCY OF CHELEKEN OIL EXTRACTION

Ashkhabad TURKMENSKAYA ISKRA in Russian 22 Mar 80 p 2

[Article by V. Lebed', chief of the Economic Planning Department, "Chelekenmorneftegazprom" Association]

[Text] The collective of the "Chelekenmorneftegazprom" Association has discussed with warm interest the resolution of the CPSU Central Committee and the USSR Council of Ministers entitled "On improvement of the planning and acceleration of the effect of the economic mechanism on increase of the effectiveness of production and the quality of work." In the shops and subsections an impartial discussion was held about the use of resources and possibilities to elevate the indicators of fuel extraction and surveying. People named, together with successes, also failures in the planning and administration of production and in the material stimulation of good labor.

The successes of the Cheleken oil workers have been great. The plans for the extraction and sale of black and blue fuel have been overfulfilled. Its quality has been improved. And yet many tasks of economic and social development have been solved incompletely. A serious lag has been allowed in surveying the depths of the Caspian Sea: since the start of the Five-Year Plan the underproduction of tunneling has amounted to over 52,000 meters. The accident rate is high, losses of working time are large, and violations of technological and labor discipline are frequent. Through the fault of the administration of marine survey drilling the losses have reached almost 10 million rubles.

All this is undoubtedly reflected in the general indicators of the collective. And the people have the right to require from the management of the association the adoption of serious measures to correct the situation in drilling and the party and administrative action on negligent workers, a more rigorous response for the violation of discipline, poor organization and carelessness. The partkom of the Association has adopted many decisions on this matter. The task is to implement them.

It is no secret that we do not always manage capably. For example, the administration of technical supply and production has on the base a stock of baryta 4 times larger than the drillers need. In essence, materials amounting to a sum of about 2 million rubles have been frozen. Working capital has been reduced. The administration of marine survey drilling cannot, and also need not, purchase such a quantity of baryta. And reagents lie on an open platform and are spoiled. And when they are put to use, it is known that they lower the quality of solutions.

In past years great difficulties were experienced due to a shortage of cement and pipes. The wells stood awaiting them for weeks, and of course this was also reflected in the fulfilment of the tunneling plan. The poor balancing of tasks in drilling with the material and equipment supply was sharply felt. We posed this question to the "Kaspmorneftegazprom" Association, but without success. And this year the matter has been complicated still more. We have been forced to speak directly about the major miscalculations in the planning of survey drilling for our association.

A new method of planning is defined in the resolution of the CPSU Central Committee and the USSR Council of Ministers. The degree of fulfilment of tasks will be estimated by the increasing results from the start of the Five-Year Plan and the year. Enterprises, shops and sections which have allowed lagging are obliged to compensate for the omission in the following month or year. The planning system must be constructed so that the entire complex of indicators impels the labor collectives to struggle for high productivity at each working place, for a maximum return on investment and a saving of material resources and labor.

Such it ought to be. But what is the situation in reality? In spite of the fact that the administration of marine survey drilling does not from year to year increase, but reduces the indicators and intensifies the gap between plan and fact, the All-Union "Kaspmorneftegazprom" Industrial Association, without giving special scrutiny to the reasons for the chronic lagging that has developed, increases the plans for it from year to year without reinforcing them by either organizational or productive measures.

It is a matter of scarcity not only of materials but also of crane ships, of an acute need for highly qualified specialists, of poor design of berths and other facilities of "Chelenmorneftegazprom," including housing. The production planning section also helps poorly in the selection of technical personnel and workers. In brief, while determining ever more intensive plans for the Chelenek oil workers, the association does not give them the possibility of eliminating lagging.

At the present time the Eleventh Five-Year Plan is being developed. And again, in our opinion, this is being done without consideration of the real possibilities and reserves of the drillers. The impression is given that the management of "Kaspmorneftegazprom" is reorganizing the work in the light of the resolution of the party and government, where it is directly indacated that the formation of the Five-Year and annual plans must start from below, on the basis of scientific and engineering calculations, judicious analysis and with vision of the prospects. Calculations show that the Cheleken drillers also need time and specific help to improve the efficiency of surveying.

The petroleum extractors also need help. It was said above that the oil field workers of the oldest deposit of "black gold" are improving the quality of the petroleum according to plan. The quantity of mechanical admixtures has been considerably reduced in our fuel as against the standard. Unfortunately, however, not a single subsection has issued production with the honorary pentagon. In our opinion, this is explained by the poorly thought-out system of material stimulation of high-quality labor.

Earlier, before 1977, the collective of the complex petroleum preparation installation received payments for the turnover of fuel meeting specifications. But then the payments were abolished, probably for reasons of economy. However, the years that have passed have clearly shown what that apparent economy has cost the national economy. The USSR Ministry of the Gas Industry and the "Kaspmorneftegazprom" Industrial Association have now turned to the question of stimulating the output of excellent product. I would like to obtain a solution of this important problem more promptly. What is more, in the resolution of the CPSU Central Committee and the USSR Council of Ministers measures were determined for stimulation of the quality of production: the rates of stimulatory increase of wholesale prices and considerable sums from additional profits are directed into the incentive funds. To achieve that, much must be done. Profound economic analysis and searches for new reserves are needed.

The collectives of construction subsections must on the basis of control figures prepare their own counter-plans and proposals for the next Five-Year Plan, which is not far distant. Unfortunately, some measures prepared, for example, by the marine survey drilling administration, the administration of equipment supplementation, etc, are superficial and formal and are guilty of general phrases. But we need specific measures to increase the efficiency of fuel extraction and surveying. Each worker, no matter where he works, must make his personal contribution to improvement of the economic mechanism and the development of our socialist economy.

2174
CSO: 1822

DRILLING CREWS CRITICIZE SHORTCOMINGS IN MATERIAL SUPPLY

Moscow IZVESTIYA in Russian 21 Jun 80 p 2

[Article by Hero of Socialist Labor A. Shashkin, foreman at the Nizhnevartovsk Administration for Drilling Work NR-2, Hero of Socialist Labor A. Timchenko, derrick assemblers crew chief at the Surgut Administration NR-1, Ye. Fedyushkin, drilling foreman at the West Petroleum Surveying Expedition, and T. Fattakhov, drilling foreman at the Strezhevoy Drilling Administration: "Is the Next Man's Shoulder Steady?"]

[Text] Great things were expected from the Chinzharsk site. It was here in the center of Priob'ya up in the tayga that the first liters of West Siberian petroleum were collected. They hoped for a promising deposit and so they hurried to drill an exploratory borehole.

Things got delayed however. The drilling pipes here broke seven times in a row. Success came only thanks to the selfless labor of the helicopter pilots who delivered and installed the new pipes.

A production engineer from the Azerbaijan Pipe Plant in Sumgait was forced to sign to witness that the cause of the delays and accidents was the poor quality of the pipes that were produced by his own enterprise. In articles sent from a plant in Siberia, welding rules had been disregarded. The same representative from Sumgait visited the working sites of the "Strezhevoyneft" Association. And he also stated that its plant had sent substandard pipes. One batch weighing 248 tons had not been sheathed or heat treated at the plant. Poor screw threads were hidden under thick layers of insulating strip in the sleeves while it was indicated in the documents that all work had been done. Under the slightest load these pipes together with all their instrumentation fell down into the borehole. Luckily, the drilling people saw the break in time. They had themselves to set about repairing these substandard pipes....

Slackness, stupidity, and lack of control--this is what the people at Sumgait demonstrated in their articles. Last year alone at the working sites of West Siberia 25 accidents caused by the poor quality of pipes delivered, had to be overcome. About 6,000 working hours were spent on this.

There are also many defects in pipes coming from Kamensk-Uralsk, Taganrog, Rustavi and Dnepropetrovsk. And so, in the North there is now an escalating number of special bases for checking, repairing and preparing drilling pipes for operation. Everything that is not done at the plants has to be done by the operators themselves; about 600 specialists from the "Glavtyumenneftegaz" are engaged in this, and in unsuitable conditions. Each specialist in the North costs the state at least 20,000 rubles each year. And these expensive specialists are forced to duplicate the work of those at the plants, instead of extracting oil.

Control at the plants on special automatic test benches would be ten times cheaper and--very importantly--more accurate. The people in the North do not always succeed in fixing the defect on the way to the borehole. Even if the plant cannot set up its work without defects it should organize strict control. It is cheaper for the state to deal with the proper work on defective articles in the workshops of the plant than to transport them to the small round openings of the boreholes in the tayga won with so much difficult labor.

A construction site unprecedented in scale even by our state's size has been set up across the enormous territory of Siberia, covering millions of square kilometers. It is being handled by the entire nation. Thousands of enterprises supply it from the rear. Having taken up from them the laboring baton, we are striving to complete it. Success or failure in the drilling undoubtedly depends on us. But this success is set up in the pages of the draft and in the metal delivered to the construction sites.

From the very beginning the "assault" on West Siberia has been undertaken under the slogan to take its riches not by numbers but by skill, that is, with the aid of high technology of outstanding quality. It is particularly important to struggle for this now, when the West Siberian oil and gas complex is swiftly gaining tempo. This year it should yield about 315,000,000 tons of oil. That much. The suppliers do not have the right to threaten this figure.

At the beginning of the 10th Five-Year Plan a remarkable movement was born under the motto "Orders from Siberia and the Far East Ahead of Schedule." We are grateful to the collectives who are fulfilling our applications at good rates. Now, however, there is a good number of the kind of enterprises that are not meeting our requests. They include the Volgograd "Barrikady" Association. The Tomsk petroleum workers have already been waiting two years for drilling machines from there, but up to now have received (and this with the aid of arbitration!) only money in payment of fines for nondelivery of equipment.

The repair problem is also acute. At many installations assemblies have already worn out. However, there is no way to replace them. "Barrikady" was to have delivered spare parts and assemblies worth 408,000 rubles, but cost us 87,000 rubles worth. Because of lack of spares crews of the "Glavtyumenneftegaz" have lost as much working time as would be required to drill 40 deep boreholes.

The Siberian people themselves are in part guilty of the lack of discipline and irresponsibility of the suppliers. The technical, supply and legal services of our organizations have not made the necessary demands as provided for in the law on economic sanctions. You see, we could find no example of suppliers having been fined for defects and substandard equipment. Even after the breakdowns described here at the start of our letter, the Sumgait plant did not have to bear any kind of responsibility. This causes distrust of the position of the headquarters of our sectors--the Ministry of the Petroleum Industry and the Ministry of Geology. They are on a short rein from the producers of the equipment. They agree to articles that do not meet state standards.

In appealing to IZVESTIYA in a letter, we would like once again to recall several unresolved technical problems. For a long time now people have been writing and talking about the equipment earmarked for the North. But talk is just talk, and in life nothing is changed. As before, we still stop work when there are 40 degrees of frost. Last winter drilling crews at Priob'ye lost almost one month. In Nadym, Salekhard and other regions of Pripolyarye the winter layoff is even longer.

For a long time there has been talk that equipment for the north and distant regions should be lightweight, compact and convenient to assemble and transport. But even the new models are far from that. The latest "Uralmash" installation for multiple drilling of boreholes weighs about 600 tons. And the drilling organizations themselves made 150 tons of metal structures. Enormous and unproductive labor! Subassemblies and equipment arrive in the North separately and with tolerances that are too great. The gallows humor here is "plus or minus half a meter." Adjustment of equipment slows down startup. Surely a collective like "Uralmash" understands this. It should provide fully set up installations that have been checked out at a site. It also seems that it should obtain high quality subassemblies from its own suppliers in good time--they are also meeting orders for Siberia.

There is another problem. This is the up-to-date nature of equipment. It is known how efficient multiple directional drilling is under the conditions of the Siberian marshes. It makes it possible to drill up to 15 boreholes from a single base but sinking the boreholes must be done with pinpoint accuracy. But we still do not have enough instruments for monitoring the borehole and the position of the drilling bit under the ground.

West Siberia has embarked on a new stage of its development. The union republics and major economic centers have been recruited for the construction of housing and roads. This is a great help. We rely on it. And so, comrade suppliers, we are making our proposals and comments known to you through the medium of the newspaper. You can correct much quickly.

All you have to do is approach fulfillment of the orders of the people in Siberia with a high sense of civic responsibility. To feel that you are fully fledged participants in the construction of a gigantic oil and gas complex. Everyone--from the leaders of ministries and enterprises to each foreman and worker.

[illegible]
CSO: [illegible]

FUELS

NEW MACHINE INCREASES OUTPUT OF THIN COAL BEDS

Moscow IZVESTIYA in Russian 6 Jul 80 p 1

[Article by P. Voroshilov, in-house correspondent of IZVESTIYA: "Mining Giant Operates"]

[Text] The miners of the mine "Abashevskaya" in Kuzbass have successfully developed a new, highly productive coal-extracting complex.

Quite recently such thin beds in the Kuzbass were written off as unpromising. They are barely over a meter thick, with local elevations, and are not solid. There are many pyrite inclusions. You have only to barely stop the combine and grab an explosive. On another shift you will not even load a dozen cars.

But here is news: at the "Abashevskaya" mine the brigade of V. Yermakov is taking 1,100-1,300 tons of coal per day from the low-thickness beds. What is the miracle? There are naturally no miracles. "Abashevskaya" has received a new coal-extracting complex "KMT" that is adapted for working beds up to 1.5 meters. The "kid"," as the miners call it, proved to be a giant. It has a powerful mechanized roof: each support holds 30 T more of load. And the combine, without any special efforts crushes the hardest rocks that fall into the coal bed.

"The potentialities of the new complex," the chief engineer of the mine, V. Kolokol'tsev believes, "have far from been revealed. A lot is indicated by the fact that we succeeded in taking 2,380 T of coal in a day with it. The machine is promising and reliable. In the faces, with a large work fr front, the load on it can be increased even more."

The brigade of V. Yermakov recently received a new coal field. The miners are confident that with the help of the new underground giant they will pass the half-million boundary in a year at the low-thickness beds, that is, they will double the extraction of high-quality coal.

9035
CSO: 1822

FUELS

BRIEFS

GASOLINE FIRE--Orel, 22 Jun--The trouble happened suddenly. A fire started at the bulk plant at the Stal'noy Kon' station from a lightning bolt. In an instant, the enormous gasoline tank became an enormous flaming barrel. The firemen who came to the site of the accident from the oblast center, and then from Mtsensk, Bolkhov, Zmnevka and Naryshkin acted efficiently. The flame, which burst from the tank with a roar was subdued in 25 hours. With the help of foam-formers they extinguished the fire. But within a few seconds it flared up again, it was hidden in the breaks formed by the bent edges of the reservoir. The foam did not penetrate there. The mechanics of the bulk plant, A. Gusev and A. Shalunov displayed boldness a and courage. Drenched in air-mechanical foam, under conditions of intolerable heat they unscrewed dozens of screws and opened the viewing and emergency traps of the reservoir. The fire rose up four times, forcing the people who were collapsing from fatigue again and again to fight the flames. The fire waterspout retreated. [Text] Moscow PRAVDA in Russian 23 Jun 80 p 8] 9035

DUMP TRUCK CONVERSION--The machine in shortest supply at a construction site is the dump truck. Even better is a dump truck trailer. Then there is no price for it: in one trip one can bring about 15 tons of bulk material and unload in counted minutes. But what if there are no such machines? "No trouble," decided the specialists of the State Planning Design and Experimental Institute of Coal Machine Building. And they thought up how to turn an ordinary truck tractor with heavy-load trailer into a dump truck. This conversion helps to make a device in the form of a hinged four-link chain: the lower link is the base, the upper is a platform on which the tractor is driven. In the initial position, the platform lies on the foundation on a level with the unloading area, and the tractor easily drives up onto it. After this, supports are placed under the wheels and the platform is raised. The trailer, whose rear wheels remain on the ground, is inclined, and the load falls out from the body. [Text] [Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 26 Jun 80 p 4] 9035

BENDING PIPELINES--Did you hear at some time that in the main gas pipelines the pipes also have to be bent often? You didn't? This is no accident: while the diameter of the pipes and the thickness of the walls were comparatively small, they were welded into long lengths and bent themselves according to the profile of the trench. But the diameter and thickness of the walls grew and the rigidity of the pipes increased. And at the same time the problem became more acute: how to bend such pipes so that they do not crumple or have Kovar "folds." Rigid pipes are usually bent after being preliminarily tightly packed with sand so that crimps are not formed in the bending. But this method is not suitable for large diameters. What can the sand be replaced with? It turned out that air could be used. This was the belief of Doctor of Technical Sciences B. V. Samoylov from the I.M. Gubkin Moscow Institute of Petrochemical and Gas Industry. The air mandrel he suggested externally looks like an aerostat cylinder almost 1.5 meters in diameter and several meters long.But it has its own secret: under the outer shell a second is hidden with smaller dimensions. For what? This is so that time and energy are not lost in vain when it is necessary to shift the mandrel from one section of the pipeline to another. In these cases the internal cylinder remains filled. The air is emptied only from the gap between the shells. Slightly "thinner" the mandrel is easily moved on its own chassis to the new place where air only needs to be filled into this gap. [Text] [Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 26 Jun 80 p 4] 9035

TYUMEN' OIL--Tyumen', 21 Jun--The oil pipelines from kray to kray have intersected the spaces of the Tyumenskaya oblast. The "black gold" of the central Ob' region continuously enters the refineries of Omsk, Angarsk, Al'met'yevsk, Kuybyshev and Perm'. A lot of credit here goes to the collective of the Surgut oil pipeline administration, that at the final stage of the five-year plan successfully coped with the adopted socialist commitments. And the boundaries that the oil pipeline layers plan to take this year are high: to deliver above the plan 400,000 tons of oil, to save by means of the optimal pumping patterns 15 million kilowatt-hours of electricity. [Text] [Moscow PRAVDA in Russian 22 Jun 80 p 2] 9035

CSO: 1822 END

END OF
FICHE
DATE FILMED

9 Sept. '80

MAK